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THE

DENTAL COSMOS:

A

MONTHLY RECORD OF DENTAL SCIENCE.

Devoted to the Interests of the Profession.

EDITED BY

J. D. WHITE, M.D., D.D.S.
J. H. McQUILLEN, D.D.S.
GEO. J. ZIEGLER, M.D.

Observe, Compare, Reflect, Record.

VOL. II.

PHILADELPHIA:
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THE

DENTAL COSMOS.

NEW SERIES.

Vol. II. PHILADELPHIA, AUGUST, 1860. No. 1.

ORIGINAL COMMUNICATIONS.

PRACTICAL HINTS.

BY J. D. WHITE.

The absorption of dentine in roots of permanent teeth, as far as we are aware, has not received much attention; how or why it occurs we do not pretend to explain, or in what state or condition of the health of the patient it is most liable to occur, we are entirely ignorant. Where it is due to the direct contact of one tooth with another during eruption, some explanation might be given; but where it occurs unattended by apparent irritation of the gums or alveolo-dental membranes, it is difficult to account for. Under such circumstances, many valuable teeth are lost which might otherwise be saved.

1*st Case.*—Fifteen years ago, a gentleman over fifty years of age consulted us for an uneasy and continual pain in the region of the left inferior wisdom tooth; it had been examined by several dentists, but as the tooth to all appearances was sound, no cause could be assigned for the pain, and the patient was dismissed. Upon examining the case the second time, we observed some unnatural looseness of the tooth, and a very little swelling and blueness of the gum on the buccal side; we advised its extraction, believing that it was incipient abscess; but when the tooth was removed we found that the roots had been partially absorbed upon the side that the slight swelling was, the pulp had become dead, and there was a small amount of pus about the tooth. This patient was in good health, and of a well-balanced temperament.

2*d Case.*—Ten years since, a gentleman, aged thirty-five, called, suffering with slight pain in the left superior first molar. Enjoying good health, sanguine-nervous temperament, we could discover no cause of pain; there was very slight redness of the margins of the gums; we scarrified them slightly to excite bleeding, and then applied laudanum to the parts on cotton, and requested the patient to call again if the pain continued. He called the next day, remarking that the pain continued the same, and that he believed that he had discovered the cause of the trouble; upon running his finger around the gum he found that it gave way or felt soft on the palatine side; we passed our probe between the gum and the tooth, and found that it entered a large cavity corresponding to the neck of the tooth on the palatine root. It was a large tooth, and the crown perfectly sound. We packed cotton between the crown of the tooth and the gum, which filled up this cavity; this was renewed daily, for three days, when we found that the cavity was fresh and white, and the surface free from decay. It was a case of absorption of the tooth substance; the pulp was exposed, we destroyed it with the arsenical paste; the palatine root was not entirely cut away by the absorption, and in due time we plugged the cavity, and the tooth is in a good condition up to the present time.

3*d Case.*—A gentleman called, aged thirty, six years ago, complaining of severe pain along the right superior maxillary. The pain was not confined to any one tooth more than another; there was considerable soreness upon pressure along the gums, on the palatine as well as the buccal side. This patient was in fine health, and a strong and well-balanced temperament. Upon careful examination we could pass a probe between the crown of the first molar and the gum from the palatine side quite half way through the tooth; we at once discovered it to be a case of absorption of the dentine; the crown of the tooth was sound; we wedged the gum away, as described in the second case, destroyed the pulp which had been laid bare, and as the palatine root was entirely detached from the crown we extracted it; the fungus which filled the cavity was cut away, a portion of it having been deadened by the arsenical paste used in destroying the vitality of the pulp; the buccal roots were filled as far as practicable, as well as the nerve cavity of the crown; the parts healed up kindly, and the case remains up to this time in a healthy condition, and the tooth useful. The patient says it is as good as any other tooth.

A number of cases have occurred to us where the palatine roots of the superior molars have become exposed to their apices by absorption of the gums, and we have *amputated* them, and plugged the nerve chambers, and the cases remain comfortable and useful. In some cases where partial recession of the gums has taken place, and decay has detached the palatine roots, we have extracted the apex of the roots, plugged the nerve cavities, and rendered the cases useful. In one instance, a gentleman split off about one-fourth of the crown of a right superior molar, which was a dead tooth; the fracture extended down between the palatine and buccal roots; we extracted the palatine root, plugged the nerve cavity, and the buccal fragment remains healthy and useful. We are not aware that this practice has been pursued by others.

Case 4th.—A lady, aged over fifty, called, complaining of pain in the left superior jaw; nervous temperament; periosteal irritability is a characteristic of the family when a nerve is destroyed, and in one member of the family, aged twenty, we extracted a second inferior molar for irritation of the periosteum of a sound tooth, after several days of extreme suffering. Upon close examination we could pass a probe between the gum and the crown of the wisdom tooth; we wedged the gum away, as described in case two, and destroyed the pulp of the tooth and a portion of the gum which filled the absorbed cavity; the tooth was quite loose; we plugged the cavity with "Hill's stopping," which rendered it comfortable. In a few days after, upon the patient calling again, suffering with pain, we found the same process was going on under the margin of the gum of the second and adjoining molar; we displaced the gum as before described, found the pulp exposed, but the tooth not so much absorbed; we destroyed the pulp and plugged the tooth with gold. There was no appearance of irritation of the gums. We have frequently extracted loose front teeth from absorption of their roots from the apex.

(To be continued.)

Entered, according to Act of Congress, in the year 1860, by JONES & WHITE, in the Clerk's Office of the District Court for the Eastern District of Pennsylvania

TREATISE UPON THE GENESIS AND DEVELOPMENT OF THE DENTAL FOLLICLES TO THE EPOCH OF THE ERUPTION OF THE TEETH.

BY DRS. CH. ROBIN AND E. MAGITOT.

[Translated for the DENTAL COSMOS, from the "*Journal de la Physiologie de l'Homme et des Animaux*," DR. E. BROWN-SÉQUARD, editor, by E. SUREAU.]

PRELIMINARY.

WE propose to exhibit in this work the results of our observations upon the mode of origin and the development of the dental follicle, including therein the tissues which bear a part in the constitution of the tooth. Our examinations have been made upon the human fœtus, also upon those of the domestic mammalia, and have been extended even to the reptiles. If we except the differences existing in the form and size of the follicles, we will everywhere find a remarkable uniformity of constitution in all these organs, and a great similarity in the phenomena of their origin and of their development.

This account of our investigations will be divided in the following manner:—

In the first chapter will be described the evolution of the jaws before the appearance of the dental follicles. A knowledge of this is indispensable to a right understanding of the phenomena of the development of the dental follicles and of the teeth.

The second chapter will be devoted to the study of the genesis and constitution of the follicle, considered from the moment of the appearance of the bulb, which is always first produced, until the commencement of the production of the tooth—that is to say, to the birth of the first hollow crown or cap of the dentine.

The third chapter will treat of the manner of origin and development of the constituent parts of the tooth—ivory, enamel, and dentine; and also of the structure of the formative organs of these parts.

Finally, in the fourth and last chapter, we will describe, in discussing them, the processes that have been followed in order to ascertain the anatomical and physiological particularities mentioned in the first three chapters.

The observation of the facts upon which this treatise rests is, if not easy, at least fruitful in results of great accuracy. The transparency of the parts is favorable to observation, and permits great distinctness in following the outlines which limit each of the organs under consideration; these outlines are at first diffuse, then more and more distinct. When an isolated preparation is studied for the first time, it is found very perplexing to give an exact interpretation of such and such of these outlines, or of the nature of the organ limited by them; but as the same preparation may unite in itself a series of juxtaposed follicles, the constancy and regularity of the relations which affect the organs that constitute them give a certain preciseness to the decision of the nature of the objects. Finally, this decision becomes at the same time easy and accurate, when the observation is made on a series of pieces from the same subject at different ages, or on pieces belonging to distinct species. The comparison of these organs at their different periods in the same animal, and the comparison of the follicles in different species, always show similar anatomic relations, (excepting some secondary differences in form and size;) this leaves no place for doubt relative to the nature and office of each of the constituent parts of the follicular apparatus.

It is astonishing that uncertainty has existed so long in regard to the determination of the phenomena of the genesis and evolution of the teeth. This is, without doubt, the result of the constant neglect of collecting and observing a series of preparations, corresponding to the successive phases of the same phenomenon in different animal species.

When the constituent parts of the follicle are completely collected and grouped in their reciprocal relations, each follicle soon becomes too voluminous to be observed in its entirety by the aid of transmitted light. By the time that the various organs of the follicles are individually more developed, and more easy to dissect, the advantages of their transparency and the simultaneous observation of all the tissues in process of evolution are lost on account of their size. But in compensation for this, the anatomic nature of each organ can be determined at this time, and even at anterior periods, by detaching from each of them such a fragment as is sufficient for microscopic observation.

It is important to mention particularly that even at its first appearance, as well as later, each of these constituent parts has an anatomic composition and a texture peculiar to itself. The differences of texture between the constituent parts of the follicular apparatus are so great that the observer is necessarily led to call in question the descriptions given by the numerous authors, who have studied the development of the teeth without taking into consideration the intimate anatomical nature and the characteristics of the texture established by microscopic observation in the parts that they have described.

It is evident that there are two methods of arriving at a precise determination of the nature of the parts constituting the follicular apparatus, however minute or delicate they may be. These two methods are:—

1st. The study of these organs in the order of their successive appearance, and their reciprocal relations at the time of that appearance.

2d. The examination of the anatomical composition, and of the intimate texture of each of these parts, not only at the time of their appearance, but during all the successive phases of their evolution.

In the first case, the physiologist observes the whole of the follicular apparatus by the help of transmitted light—an observation rendered easy by the minuteness of the organs which it contains.

The second case requires the individual examination of each organ that can be isolated by dissection. This examination is made equally possible by the facility with which the small organs, that constitute the entirety of the follicles, can be detached from each other.

The follicles include under a small volume (at first very transparent) parts that differ widely in their anatomical composition and in immediate juxtaposition, viz., the bulb and cells of the dentine, the follicular wall, the organ of the enamel and its cells, followed shortly by the enamel, the ivory, and, later still, the cement. These particularities make it possible to observe the origin and development of very distinct tissues almost with a glance of the eye. This fact is of very great interest to general anatomy, allowing as it does an accurate observation and comparison of facts, which in other tissues must be observed separately, in parts of the economy far removed from each other.

CHAPTER FIRST.

EVOLUTION OF THE JAWS PREVIOUS TO THE APPEARANCE OF THE DENTAL FOLLICLES.

There exists such a unity between the development of the teeth and that of the maxillary bones, that we have been led, almost against our will, to study the changes that occur in the constitution of the jaw, before and during the evolution of the follicles. We have found that it is impossible to comprehend fully the description of that evolution without a previous knowledge of these changes. The consideration of these has led us to treat in this chapter: First, the order in which the various parts that constitute the jaws appear; second, the jaws before the appearance of the dental bulbs; third, the jaws at the time of the origin of the follicles. Each of these subjects will be considered in a separate paragraph.

§ 1. *The order of the appearance of the various constituent parts of the jaws.*—The two jaws originate with the aid and at the expense of the first embryonic visceral arch; this is also the case with the soft parts that accompany them. They appear under the form of papillæ or bourgeons, (called *maxillaries* by M. Coste, in accordance with that which is learned from their ulterior evolution.) These bourgeons (*sprouts*) are situated underneath the embryonic encephalic mass or cerebral capsule.*

In the human fœtus at 15 or 18 days, the lower jaw is represented by two small tubercles, which are the tongues of origin of the principal part of the first visceral arch. The superior maxillary bourgeons, less advanced than the preceding, are placed upon the sides and a little higher than the embryonic *frontal apophysis* or prolongation of the anterior cerebral cell. They are a dependency and a prolongation of the external side of the base of the tongues, or inferior maxillary bourgeons, and are consequently part of the first visceral arch.

Toward the 25th or 28th day, the embryo being nearly thirty millimetres (1·18 inch) in total length, the inferior maxillary bourgeons are united upon the median line; and the superior bourgeons, always isolated, have descended to the level of notch of the frontal apophysis.

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* It is known that since Rathke, (1826,) the name of *branchial* or *visceral arches* has been given to some transitory embryonic organs disposed under the form of arches at the anterior or *cephalo-cervical* extremity of the embryonic vertebræ; they are five in number in birds, and four in the mammifera, and are superposed from below the *cerebral capsule* to the level of the heart. They are contiguous, but distinct and narrow slits, called *branchial* or *visceral slits*, can be seen between them. It is by the aid and at the expense of their tissue that the different sub-cranial organs of the face and all those of the neck successively originate. They appear, one after the other, from the top downward, as soon as the cephalic extremity of the embryo is separated from the blastoderm, and under the form of *bourgeons* or *tongues* (at the blunt extremity) which proceed from the base of the cerebral capsule as soon as the *visceral or ventral laminæ of the body* of the embryo are closed. These *tongues*, called *branchial* or *visceral*, converge at each side below the cerebral capsule toward the median line, and it is in uniting that they form arches; at the same time the ventral laminæ disappear at this level. The first arch is the largest, the second a little less, as are likewise the others, which show themselves when the first have already commenced to give origin to definite organs. One of the authors of this treatise has frequently proved that they are not formed by the embryonic cells, but by the embryo-plastic nuclei, and are covered by a unique range of epithelial mosaic-like cells.

From the 30th to the 35th day the tubercles or incisive bourgeons commence at the end of the latter, and, separated at first by a groove, they unite in one median part near the 40th day, but only at their anterior edge; each bourgeon exhibiting behind this edge a prolongation in which the intermaxillary or incisive cartilage is developed. Near the 40th or 45th day each of these prolongations unites at its exterior side with the corresponding superior maxillary bourgeon, without being yet joined to its congener upon the median stem. The arch of the upper jaw is formed about twelve or fourteen days later than that of the other. In this jaw the incisive prolongations remain free behind at their internal edge alone, uniting at the median line in order to form the palate, only about the 60th day. Thus the upper jaw owes its formation to four bourgeons, of which the two exterior (maxillary bourgeons) represent the body of the jaw, and belong to the first visceral arch; the two middle ones soon unite into one, called the incisive or *sous-cloison*, (sub-partition,) each corresponding to the part of the maxillary called the incisive or intermaxillary bone. These last do not proceed from visceral arches, but from the olfactory prolongation of the embryonic frontal apophysis.

The maxillary bourgeons are then composed exclusively of embryoplastic tissue, formed particularly of nuclei of that name, and of a little interposed amorphous matter, and covered with an epidermis of mosaic-like cells.

The cartilages appear in the heart of these bourgeons, some time after their union, in exactly the same order as the bourgeons themselves, viz., two inferior maxillary cartilages, two superior maxillary cartilages, then, a little later, the two incisive cartilages. The origin of all these takes place by the method called *genesis*.

At this moment, the portion of primitive embryo-plastic tissue comprised between the superficial epithelium and the central cartilage already includes a certain number of laminated fibres, some complete and some still in the condition of fusiform bodies. These laminated fibres are then developed and multiplied in order to form the mucous membrane, while the epidermic bed increases in thickness.

A short time after this is developed the more transparent bed, corresponding to the sub-mucous laminated tissue, and then, in the midst of the central cartilage, appear the first points of ossification.

Finally, following this series of phenomena, and at a period varying between the 50th and 65th day after conception, little opaque, conoid masses appear in the heart of the sub-mucous tissue, filling the groove of the maxillaries; these are the first vestiges of the bulb by which the appearance of each follicle commences.

§ 2. *Of the jaws before the appearance of the follicles.*—Reckoning from the epoch of the union of the tubercle or incisive bourgeon (become simple instead of double as heretofore) with the bourgeons or superior maxillary prolongations of the first visceral arch, the ulterior condition of both of the jaws, previous to the appearance of the dental bulbs, can be considered individually.

a. Lower jaw.

At the time when the two bourgeons of the inferior maxillary arch unite, the jaw of the human species has the form of a small ogive arch, thin and sharp at the anterior or superior edge. Almost immeditely after the junction is formed, *Meckel's cartilage* appears nearly in the middle of the thick part; it is continuous with that of the opposite side upon the median line, and is more resistent in its middle part than at the two extremities. It extends on each side to the base of the middle cerebral cell. This organ will be described subsequently; what has been already stated is sufficient for our purposes at this moment. The cartilage of the inferior maxillary rises on the external side of *Meckel's cartilage*, very near it, and at about the middle of its length, and consequently in the external part of the first visceral arch. The cartilage of the inferior maxillary is at first very soft, flattened at the sides, and raised more behind than in front, where it is almost pointed, which gives it an elongated triangular shape at the blunt angles.

It originates by genesis, in the same manner as the other bones, such as those of the base of the cranium, the body of the vertebræ, etc.* This cartilage afterwards occupies the whole length of each side of the jaw, but it remains for a long time separated from its congener.

The lower jaw, regarded thus in its totality, is found to be composed in the following manner:—

1st. On the outer side of *Meckel's cartilage*, which is at the centre, is a narrow, elongated cartilage, which is a little raised in the vertical direction; this is the cartilage of the inferior maxillary, and two protuberances presently appear behind it, which become the coronoid and condylar apophyses of the ascending branch. It is thicker transversely in front of these protuberances than at the level and at its anterior part, but presents no groove. The first traces of ossification appear near the middle of this cartilage; they are elongated in form, and show themselves only about the

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* Bischoff, speaking of the inferior maxillary, says: "The articular surface is produced by histological separation, in the same manner as the sides of the vertebræ are separated."—(*Traité du Developpement.*) This fact cannot be considered as applying to the cartilages of the jaw and of the *rocher*. One of the authors of this work has proved, by direct observations upon the human embryo, and upon those of the cow, hog, rabbit, sheep, and rat, that neither the cartilages of the lower jaw nor those of the sides are in continuity of texture, at the time of their genesis, with those against which they articulate, no more than the occipital is at first continuous with the atlas. All these cartilages originate like distinct organs separated by a bed of laminated tissue at the very level of the passages where the articular cavities will be at a later period.

35th day. The whole cartilage, which is hardly two-hundredths of an inch in thickness, is rapidly invaded by ossification. Two very thin ridges then appear on the superior edge of the bone; these do not exist in the cartilaginous state; they originate according to the method of ossification called invasion. At an early period these give the bone the appearance of a bi-laminated organ; that is, one formed of two parallel osseous bands, although the ossification began at one point only. These ridges limit the groove in which the follicles originate—this deserves a minute description, which will be given later.

2d. Around the inferior maxillary cartilage is a comparatively thick bed of soft gelatiniform tissue, covered with epithelium. The most superficial sub-epithelial portion of this has the office, by its ulterior development, of forming the mucous membrane, the remainder representing the sub-mucous tissue.

The cartilage exhibits the ordinary structure of cartilages of ossification in irregular polyhedral, or ovoid, chondroplasts. The soft tissue is formed of a mass composed principally of embryo-plastic nuclei, (called fibro-plastic by many authors;) these are united to a small number of fibro-plastic fusiform bodies, and are traversed by capillary vessels. A little transparent amorphous matter is found interposed among these elements. The whole of this tissue is covered with a very thin bed of epithelial cells, that are broad and mosaic-like at the surface, small and polyhedral beneath. When the whole jaw is placed under the microscope, and but slightly magnified, this epithelial plate, the nuclei of which are only then discernible, looks like a bed of small globules that have been made slightly polyhedral or pavimentous (*like a mosaic pavement*) by their proximity to each other. This appearance is especially owing to the fact that the dark color of the nuclei is affected by the transparency of the substance of the cells which are interposed between them.

b. Upper jaw.

The cartilage of the body of the superior maxillary first appears in the shape of a small, narrow lamina placed horizontally below the eye; it is slightly convex and a little inflated on the outside, while the inner edge is very thin. It is this edge which unites, in the human species, with the external edge of the incisive or intermaxillary cartilage. This exists for some time as a thin triangular lamel, which is a little thicker before than behind at the blunt posterior summit. The back part unites in front to the cartilage, properly called maxillary, at the time when the first point of ossification appears in the alveolar edge of the latter—that is to say, near the 40th or 45th day. An osseous point appears in the incisive two or three days after this, as well as we can judge from the pieces and by comparison with the other mammifera. As to the soft parts that surround these organs, they exhibit the same texture as those that surround the inferior maxillary, their thickness being even less. It will also be seen later that, during ossification, the dental groove is developed by a method of ossification similar to that by which the groove of the inferior maxillary is produced, and that this groove exists before the appearance of the dental bulbs.*

The union of the soft parts of each half of the palate with each other, and with those of the median partition of the nasal fossæ at the mesial line, occurs before the appearance of the dental follicles. It takes place, as we have already stated, near the 60th day. It is really in the ninth week that the mouth is formed by the occlusion of the nasal fossæ above the tongue. It is also to be remarked that at the time when the follicles appear in the upper jaw, the corresponding lip already exists, like a narrow fold with a thin edge.

(To be continued.)

DENTAL EXCAVATORS.

BY D. H. GOODWILLIE, D.D.S.

In the operation of filling teeth there are several things of the very first importance, not only in regard to the operators themselves, but also in a certain degree to those operated upon. The time needlessly occupied in the operation of filling is of some importance to both,—and any way by which we could arrive at the required results with expedition should receive attention from the profession. The time and efficiency necessary to arrive at the desired point we are endeavoring to reach, depend very materially upon the instruments used in an operation. As the excavators are the first instruments that come into our hands for the highly useful operation of filling teeth, I will endeavor to arrange them in a systematic manner, and to throw out some ideas which I hope may be useful, at least to some who may be setting out in professional life; and last but not least, to give the manufacturers a proper idea of what such instruments should be to meet the requirements of the profession. No one would deny the propriety of using one or two good instruments in the place of half a dozen inefficient ones, for thereby we would save time and suffering and arrive at the required results with more satisfaction to both parties concerned in this highly useful and not altogether pleasant operation to our patients.

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* According to M. Guillot, "these primitive traces (those of the teeth) originate at the same time as the first traces of the bone, before the muscles, *nerves, and blood-vessels can be distinguished in the different parts of the face.*" And again: "The dental spheroids really appear first, the bones after them; the mucous membrane and the periosteum belong to secondary creation."—(N. Guillot, Recherches sur la genèse et l'evolution des dents et des machoires; *Annales des Sciences naturelles*, Paris, 1859, 8vo., vol. ix. pp. 288, 289, 310.) Dissections upon the fresh fœtus, and not upon preserved pieces reduced to thin cuts, and the microscopic examination of fresh preparations, make it easy to prove that this opinion is erroneous. The vessels, nerves, bones, and many muscles of the jaws are already developed, and easily seen by transparency, or even readily dissected, previous to the time of the appearance of the dental follicles. The following paragraph will demonstrate the exactitude of the latter facts, which have been long known elsewhere.

I propose to arrange excavators and enamel cutters into three classes, viz., I. Chisels; II. Hatchets; and III. Hoes; and with the different modifications, or rather combinations of these three classes, the requirements of every case can be fully met.

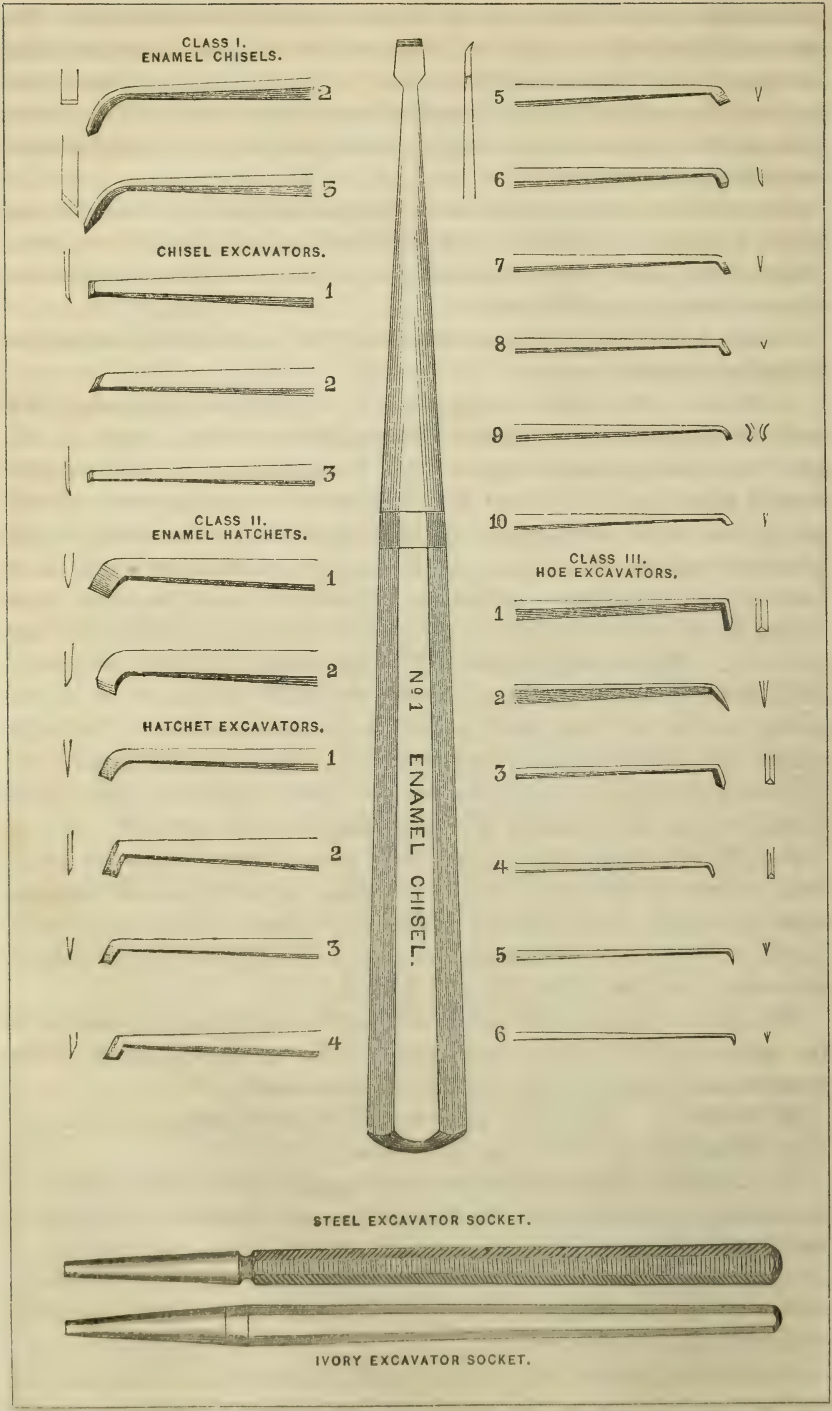
I hope, by the help of the accompanying plate, to make this subject intelligible and useful to all.

I. Chisels. We have in this class a very simple instrument. To such of this class as are designed especially for cutting enamel, I will give the name of enamel chisels. No. 1 represents a full size straight enamel chisel, and also shows the thickness of the blade, which should not be too thick, as it cannot be used to cut away the enamel in the proximal surfaces of the teeth, but it should be of sufficient strength to keep it from springing or breaking. The width should be about one-eighth of an inch—the bevel on all chisels should invariably be on one side only. The necessity of this will be seen when used upon the proximal surfaces, especially of the incisors; the chisel should cut in a line nearly parallel with the tooth on which you are operating. The edge should turn a very little toward the straight side of the chisel, and this will allow the chisel to cut in the manner above alluded to. Two other enamel chisels of this class will generally be found sufficient. No. 2 represents an enamel chisel with a curve for cutting on posterior proximal surfaces of the teeth. No. 3 the same as No. 2, except that the edge is oblique. Two of this number are required. There should be a number of the chisel excavators, ranging in width from one-sixteenth of an inch to two lines, (No. 1, 2, and 3, C. E.)

The handles of enamel chisels should not be larger than represented in the plate, (No. 1.) The plainer they are, the easier kept clean. The temper must be hard or they will not cut the enamel.

II. Hatchets. Under this class we will require a number of sizes, as they will be used more than any other class.

No. 1 of this class is an enamel hatchet, and, as its name implies, is used in cutting the enamel. The blade of this instrument should be about one-eighth of an inch in width—beveled on both sides—but may be on one side only, as represented in No. 2. In this case two will be required, whereas if the one beveled on both sides is used, one instrument will be sufficient. As this enamel hatchet is used most exclusively for opening crown cavities, there is one thing of great importance to be noticed in the length of the blade. It should not be too long, to avoid needlessly exposing a nerve. The blade of this instrument should not be as long as


CLASS I.
ENAMEL CHISELS.
CHISEL EXCAVATORS.
CLASS II.
ENAMEL HATCHETS.
HATCHET EXCAVATORS.
Nº 1 ENAMEL CHISEL.
CLASS III.
HOE EXCAVATORS.
STEEL EXCAVATOR SOCKET.
IVORY EXCAVATOR SOCKET.

the cavity is deep—that is, where the cavity is deep with the nerve not exposed, but a sufficient amount of dentine over the pulp to protect it in ordinary cases. If the blade is too long, the point may very often strike into the cavity and upon the intervening dentine over the pulp, and as a great deal of force is required to cut the enamel—that intervening dentine may often be broken and the nerve exposed, when with care the tooth may have preserved to it its great source of life—the nerve. To avoid this state of affairs the blade of the enamel hatchet should not be longer than one-eighth of an inch, so that instead of the blade reaching the bottom of the cavity, the shaft of the instrument will strike upon the crown of the tooth, and so avoid this difficulty. The shaft and blade of this instrument should be strong, so as not to spring or break, and should have a handle the same as the enamel chisel, No. 1, so that it may be firmly held in the hand. The temper must be hard, or it will not cut the enamel. Of the hatchet excavators there may be few combinations. No. 2 represents a combination of all the classes. Beveling the blade in one way it will cut like a chisel, and in another way it will cut like a hoe. The combination of hatchet and chisel (No. 4 and 8) will, however, be found most useful. There must be rights and lefts of these instruments. The blades of hatchet excavators may vary in length from one-fourth of an inch to two lines and in width from one-eighth of an inch to two lines. (Plate, No. 1 to 10.)

There may be a curving of the blade as represented in No. 9, but I would not advocate their use, as the straight blades will he found to answer nearly all cases.

Rights and lefts are required of this instrument.

III. Hoes. This class of excavators, when properly constructed, will be found very serviceable. These instruments have three cutting edges, except those which run to a point. (Nos. 2, 5, and 6.) No. 2 runs to a point and has a different angle from the others—this excavator is useful in cutting out fissures in crown cavities especially.

No. 5 and 6 being very small and running to a point, are very useful in preparing cavities of the front teeth. They will be found especially useful in forming the cavities for the retention of fillings where the lateral walls are broken away or the cavities are shallow, as they can be readily applied to all parts of the cavity, in making a good retaining point in that part of the cavity next to the cutting edge of the tooth so essential in cavities of this kind. In the plate will be seen the side and end views of all the instruments above described.

At the bottom of the plate will be seen a steel and ivory excavator socket. The excavator points, with a short shaft, are fitted to the socket, which are made both of the same size.

These sockets with some operators may be found useful, as they can have a few sockets and a number of the excavator points (or bits.) This, however, is a matter of taste.

The manufacture of these instruments is left in a great measure to the manufacturers to make and point them. This is a thing that is quite necessary for *every* practitioner to perfectly understand, the making, pointing, and tempering these instruments. I am perfectly satisfied if such was the case, we would be better pleased with ourselves and not any less so with our operations. Dental excavators should all be made from square steel and not from the drawn or wire steel, for several reasons. Any one who has examined the structure of these two kinds of steel under the miscroscope, will very soon be convinced which of these two kinds is the better for making these highly useful instruments. It is well known to the workers of steel (especially the surgical and dental instrument makers) that the more the steel is hammered the better it becomes, and of course better fitted for cutting instruments. In the making of excavators from steel wire, it is very often found full of flaws. Under the miscroscope the particles of steel seem to have lost the attraction for each other, laterally to a certain degree, and the attraction appears to be by their poles. This state of things is no doubt produced when the wire is drawn, but is not always the same in all steel wire. When instruments are made from steel wire they are not hammered to the required size, (a thing so essential in the cutting qualities of these instruments,) but they are generally filed to the desired size. But the square steel, on the contrary, is hammered to the requisite size, and thereby the steel is much improved.

All excavators should be hammered square before the blade is turned to the desired angle, as it gets the hammering, so important, and in the turning is not so liable to break.

Those excavators that require angles should have *sharp* angles and not a general curve. The necessity of this will be seen in excavating cavities that take in the whole length of the blade, and in the case of the instrument with a general curve, it will be found to cut away the margin of the cavity, whereas in the sharp angle the margin is preserved. It may be objected to that a sharp angle is liable to break, but if sufficient care is taken in turning the blade this need be no objection. With sharp angles we are more liable to form our cavity as it should be, and secure a good margin so essential to a good filling.

PHILADELPHIA, 1860.

CASE FROM DENTAL PRACTICE.

BY J. FOSTER FLAGG, D.D.S.

MRS. W., bilio-sanguine temperament, aged forty-three. Epulis, located between the right superior lateral incisor and canine, commenced its development when the patient was thirteen years of age; was excised, and in a short time had again obtained a magnitude which was not only annoying, but liable to give pain while masticating. During the past thirty years had been excised over *three hundred* times, cauterized with Ar. Nit. Fus. frequently, and the bone scraped on several occasions. This treatment was at the hands of medical and dental practitioners. All thoughts of a cure had been, of course, long since abandoned.

In the mean while the lateral incisor, having decayed extensively, broke off at its neck, and the lady applied to me for the purpose of having its loss supplied by a pivot operation. The tumor attracted my attention at once, presenting the appearance of strangulated gum, about half the size of an ordinary grape, bluish, shiny, and bleeding freely at the slightest touch of the instrument. I informed her that, previous to pivoting, I conceived it best to cure the existing condition of things, which was, to say the least, very unsightly.

Having asked, with rather a peculiar expression, how long it would take, and having received for answer that it would probably occupy from one to three weeks, she gave me its history.

Conceiving the mode of treatment to have been entirely wrong, and much more calculated to irritate and continue than to cure a tumor of this character, my opinion was in nowise changed, but my determination was to abandon the idea of pivoting and commence by extracting the remaining fang. This was done immediately, and time was afforded for the hæmorrhage consequent upon extraction, which was very unusually profuse, to cease by the efforts of nature. Strong Iod. Tinct. (℞.—Iod. ʒij, Spts. Rect. f℥j) was then touched upon the tumor and surrounding parts, with directions to make three applications of Acid. Tannic. daily, one after each meal, and to return the next morning. Upon the occasion of the second visit the Iod. Tinct. was again used, and the same treatment as directed before continued.

By this course the tumor was reduced to the size of a small pea in one week, when a silk ligature was tied tightly around its neck. It sloughed in twenty hours. A compress of cotton saturated with Sol. Sandarac was then adapted to the gum, held firmly in position by the cuspid and central, and hardened by water.

Some considerable pain about the face and jaw supervened, together with headache, pain in the eyes, suffusion of those organs, etc., sequences perfectly attributable to the stoppage of that habitual loss of blood which had been sustained during so long a period. To correct this, ten grains of Potas. Chlo., three times daily, was ordered.

The points to which I wish especial attention directed in connection with this case are, I believe, of the utmost importance in obtaining a cure which shall be at once prompt and permanent; viz., that the slightest hæmorrhage shall be carefully guarded against during the whole treatment of such tumors, and, after their removal, the parts supported by compression until they shall have obtained a normal tonicity. It is entirely foreign to my province that I should indulge in suggestions as to the applicability of these rules outside of strictly dental practice; but I am convinced that their adoption will enable the dental surgeon to afford relief in many cases which possibly may have been, for a long time, considered incurable.

PHILADELPHIA, 1860.

SENSATIONS ATTENDING ARTIFICIAL DENTURES.

BY JNO. C. K. CROOKS, M.D.

"WE have occasionally observed conditions attending artificial dentures, particularly in full sets, for which we are unable satisfactorily to account. We will illustrate this subject by giving the experience of a lady who is wearing a full set of teeth.

"Mrs. D., about thirty-five years of age, has been wearing a full set of teeth between three and four years; she experiences some sensations similar to those of the natural teeth—for instance, after eating fruit or using acids, she experiences that very unpleasant sensation commonly known as the teeth on edge; it is attended with all the unpleasant sensations of that condition upon the natural teeth, amounting sometimes to apparent soreness. Her teeth, also, sometimes seem as though they were almost ready to ache. Food or foreign substance between them, causing pressure, produces the same unpleasant sensation experienced when a foreign body is between the natural teeth. In this case, the plates, which are of gold, fit well in the mouth, and the teeth antagonize very accurately. Now, we might be disposed to charge this somewhat to the imagination, were it not for the fact that this is just the experience of a number of others which has been given us.

"We will be quite thankful to any who will answer two or three questions in regard to such cases, clearly and definitely:—

"First. What is that condition of the natural teeth, commonly known as the teeth on edge? Second. How is it produced on artificial teeth? Third. How is the sensation of pressure exhibited on artificial teeth on plates? T."

The above are inquiries made in the May number of the *Dental Register*. Not having the *Register* regularly at hand, I beg to make some observations in the DENTAL COSMOS explanatory of such sensations when experienced under the circumstances referred to by "T.;" and while I do so, I must be allowed to express my surprise that the answers did not readily suggest themselves to the writer. However, he may have his *own* explanation, and wish to avail himself of that of others, that he might have the benefit of a *comparison of notes.*

The peculiarities in question are but a modification, or perhaps I might more properly say, an *example of common sensation*, as manifested under *extraordinary circumstances.* In other words, it is a *continuation* of sensation, after the organs, to which the sensation is referred, have been entirely lost. To explain what I wish to say more fully, I will take the case where impressions, painful or otherwise, are referred to an extremity which has long since been amputated. Here the sensations may be "*objective*" or "*subjective;*" that is, they may belong to the individual—have originated in his nervous system—the sensorium, or some portion of a nerve proceeding therefrom; or they may have been occasioned from without. But, disregarding the origin or cause of the sensation, it is referred, when *once produced*, in accordance with an "innate law of our constitution," to the *ordinary* situations of the *peripheral terminations of those nerves.* In the Taliacotian operation the same principle is illustrated still more strikingly. A flap may be taken from the forearm to restore a lost nose, and, long after the part has been completely separated from its original connections, a touch is referred to the forearm as previously; so that a smart rap upon the nose, if unseen, would (apparently very strangely) be referred to the point from which the flap was taken.

In the instance of "teeth on edge," the presence of an *acid* in the mouth is at once detected by the nerves of taste, which impression is conveyed to the sensorium, and is referred to the peripheral extremity of the maxillary nerves, viz., the *dental nerves.* Now, if the sensation of the presence of an acid in the mouth is referred to the dental nerves *at all*, it must be of the peculiar character *of* such sensation, to wit: "*teeth on edge.*" It can be neither "*pain*" nor "*itching,*" for in nature we know that everything proceeds with an exact uniformity. That the impression is so referred, is made more plain when we remember that the maxillary nerves are not only distributed to the teeth, but to the mucous membrane of the mouth, glands, etc.

In the case of "*pressure*" from a foreign substance between artificial teeth, the same explanation holds good. No physiologist would pretend to say that such "*pressure*" could be *felt*—that the sensation could be "*objective*"—*unless* the presence of the body was detected by the lip, tongue, or some other organ of the mouth, which was capable of receiving and transmitting the impression to the sensorium. Here, undoubtedly, the tongue is first made aware of the existence of a foreign body between the teeth, and the impression being conveyed to the brain, is referred to the "ultimate fibres" of the nerves distributed to the teeth. Of course these "ultimate fibres" do not *exist*, but the impression having become *sensorial*, is referred, in accordance with the law of our natures, to the *proper organs to which* SUCH SENSATION *belongs*, whether those organs exist or not. To illustrate still further: the presence of a body between the *natural* teeth is detected, *not* by the teeth *alone*, (frequently not at all,) but also by the tongue, and perhaps the lips and cheek. The impression imparted is at once transmitted through its several channels to the brain, and referred to the teeth, the location of the body originating the sensation. Here the "ultimate fibres," not only of the teeth, but of the tongue, lips, etc., sent out the message, yet the *brain* looked to the teeth *alone* for the difficulty. Did the *teeth* feel no inconvenience, and the *tongue* first make the discovery, the result would be the same. *Why* this is so we cannot tell. We have discovered the *law*, as that of *gravitation,* and we can go no further, yet that is all-sufficient in any such investigation.

But I have not yet answered *directly* the first inquiry, "What is that condition of the natural teeth commonly known as the teeth on edge?" In the instance of "teeth on edge," we have *simply a peculiar impression conveyed to the sensorium.* The acid, whichever it may be, produces a chemical action—a change (call it an unequal decomposition and consequent *roughness,* if you please) upon the surface of the teeth, (in the enamel,) which change gives rise to the sensation in question. Here the corrosive action of the acid manifests itself in the manner under consideration. Upon the hand or face it would be altogether different, resulting in the sensation termed "*pain*" or "*smarting,*" and a decomposition of the tissues, (an eschar,) as before, yet, everything being equal, *always with uniformity.* Again we have arrived at the ultimatum of our inquiry. To try to explain *why* acids always impart *this* peculiar sensation when acting upon the teeth, would be like trying to tell why acids are always "sour to the taste." We have *discovered a law,* and we are admonished to stop—that we can make no further progress in our investigations.

A similar sensation is produced by drawing a bit of flannel between the teeth; and to undertake to say *how* it imparted this *particular* sensation, and *no other*, would be an absurdity.

By common sensation we get ideas of "roughness," "smoothness," "hardness," "smarting pain," "lancinating pain," "cutting pain," etc., yet to trace the intimate relation between the cause and the effect is out of the question. We may take cognizance of certain phenomena, and, if *uniform*, may set them down as *laws*, which we may rely upon with certainty, but to endeavor to go further, would be to try to extend our vision "within the veil."

I have thus, I think, answered the inquiries of "T." in the *Register*, not *minutely*, as I would be glad to, had I time and space, but I have endeavored, at least, to point out the *direction* for inquiry, which "T." can pursue at his leisure.

EMPIRICISM.

BY D. L. T.

I HAVE been glad to see the DENTAL COSMOS set its face against all dental empiricisms, for there is empiricism in dental science as well as in the medical. What physician, of however much intelligence or popularity, has ever retained caste in his profession for one moment, after embarking in the manufacture or even use of patent medicines or secret remedies? And what reputable physician ever prescribes a patent medicine unless its once secret composition is known to the prescriber, whereby only is he enabled to determine whether some or all of its constituents may not be contra-indicated in the particular case? He who does so becomes as much an empiric (and is so classed universally) as the patentee himself.

We have been equally cursed in our profession, from time to time, by the patenting of nearly everything used in our art. Instruments, moulding flasks, cases, chairs, continuous gums, gutta-percha, amalgam rims electrical machines, etc., many of which were never patented by the discoverers, who scorned to clothe themselves with professional infamy for the sake of securing the "almighty dollar."

Gutta-percha was used as a base for teeth before Slayton ever heard of the article; at least it was so used in England long before the material was ever introduced into this country for any purpose, and in its natural state is really durable and serviceable, though dark colored and uncomely to the sight. The process of purifying, and especially coloring it, so alters and destroys its original texture as to render it, as a base for teeth, unless vulcanized, entirely worthless. Agents were scattered, like the locusts of Egypt, all over the country, selling office rights at $100, $50, $25, and even $15 and $10; but lo! before they had canvassed the entire country, every case had to be replaced by gold or silver. The gutta-percha wore out in six months use, and the bubble burst.

And now comes the amalgam patent, a material used by many dentists, from time immemorial, for all purposes to which it could be usefully employed. A dentist in an obscure village seizes upon the idea, and secures a patent, thus precluding the further use of an article even for filling up irregularities or forming rims for plates. I wonder if it does not "interfere with my patent" to use it for ordinary fillings for decayed teeth. Certain it is, however, it possesses no advantages over good gold or silver plate work, is less strong, much heavier, and so porous as to become offensive and utterly worthless. Like gutta-percha, it too has had its day.

Electricity, universally applied to the medical treatment of various complaints, rheumatisms, spinal diseases, and nervous affections generally, and in use long before Dr. F. was born, is next patented, or at least for its application to the painless removal of teeth.

Pure odontalgia, or toothache of a neuralgic character, (always relieved by a gentle current of galvanism,) has long been treated by dentists and physicians by electro-galvanism, which was occasionally applied as an anæsthetic in the removal of teeth and other minor surgical operations. But this patent, like the former alluded to, proved to be not only useless, (except in pure nervous toothache,) but in many cases absolutely increasing the pain to an incalculable extent.

For many years, during the infancy of dentistry, we used human teeth, sheep's teeth, hippopotamus's, ivory, wood, etc. I wonder the process of manufacturing porcelain teeth was not patented, for this was truly a new and meritorious invention. And when for a series of years we used the old-fashioned, plain, gumless teeth, is it not a wonder that the substitution of gums was not secured to the inventor by letters-patent, as the same thing was more recently, by another empiric, when applied to continuous gums baked in platina plates instead of separately or in blocks?

It is right that any discoverer in dental science of a new material, or the new application of an old one, (if the application be really meritorious,) should have all the honor, as in medical or any other science, of the discovery—nay, should derive exclusive profits from the manufacture of the new instrument or material. But that any patentee should retain caste in the profession is as absurd as the recognition of a medical patentee by the medical profession.

I am using the *osteoplastic*, and am content to purchase the material of the discoverer at his own price, (which is reasonable enough;) but the moment it is patented, if ever, I am done with it and its discoverer, and shall cease using it, or will manufacture its equivalent myself. Had the gutta-percha proved of any value, the profession would willingly have bought all the colored material of the manufacturer, and at his own price, had the patent not issued.

A gentleman has spent considerable time in experimenting on the casting of plates of aluminum, and has partially or wholly succeeded. He offers to furnish his apparatus with all the experience he has obtained for a reasonable sum, and which no dentist would object to pay; but let him so far lower his professional dignity and reputation by patenting his process, and I hope every dentist will at once exclaim "Hands off!"

I have perhaps said enough for one article. I have some further thoughts to offer in the future.

Fort Wayne, Ind.

TOOTHACHE.

BY D. L. T.

In a recent number of the Dental Cosmos we find a singular, and we might say *original* method of curing the toothache. We wonder the ingenious author has not applied for a patent, and taken rank with the distinguished patentees, Messrs. Allen, Slayton, Francis, etc.

"If I find the toothache proceeds from an exposed nerve," says the original writer, "I immediately advise filling," and that without any preparatory treatment except "the application of creosote" for a moment, while preparing the material for filling.

Now, if a nerve be exposed to the atmosphere, it sooner or later takes on diseased action. When this abnormal condition is once established, from whatever cause, a curative process can be effected *only* by changing this condition by appropriate remedies, or by the destruction or eradication of the offending nerve. The writer alluded to suggests but one indication to be fulfilled; that is, to exclude at once the external atmosphere, and this by immediate filling.

Now a variety of plans, more or less successful, have been suggested to accomplish this result, such as arching or bridging the nerve cavity, to protect it from the still greater irritation from the pressure of the filling, the introduction previously of various anodynes, etc.; but to fill an aching tooth, with "the nerve exposed," without bringing the metal into direct contact with the nerve, and thence inevitably increasing the pain to an insufferable and unmitigated extent, is contrary to all reason, or, as I was going to say, common sense—and I may as well perhaps say it as think it—for Swedenborg tells us the "evil is in the thought" quite as much or more than in the act.

The pressure of the filling, whether gold, tin, or any softer material, (except perhaps lint saturated with dissolved gutta-percha or with collodion,) under such circumstances, could not but produce the very effects sought to be ameliorated or cured by the remedy proposed. Besides, under such circumstances, diseased action has been already set up, and until this is removed by appropriate remedies, no filling of a hard substance and requiring great pressure in the condensation can be used; and even after this diseased action has been changed, the introduction of a foreign substance forcibly pressed upon the exposed nerve must necessarily produce the same effects, only in an aggravated form, of the original contact with the external atmosphere.

I would add a philosophic and rational treatment of such cases prior to filling, but presume that every educated dentist is fully instructed in the medical treatment of such diseases; nor do I doubt the ability of the writer alluded to successfully to treat the case in question; but I cannot but think his desire for fame as an original thinker has run far away with his judgment in the case under consideration. Certain am I that nine and *ten*-tenths of every *ten* cases treated by forcing gold or tin fillings upon a "denuded and sensitive nerve" will cause such an aching as to demand the removal of the tooth or the filling in "double quick time."

FORT WAYNE, IND.

REMEDY FOR SPRUNG OR WARPED PLATES.

BY A. M. HILLS.

I PRESUME every one who has worked much on suction plates has experienced more or less trouble and annoyance from their springing or warping, during the process of soldering the backings of the teeth to the plate, or in cooling after soldering. Many preventives have been offered to the profession as remedies for this petty annoyance, but all of which have sometimes failed in my hands, either for want of proper manipulations or some unavoidable circumstances. In order, therefore, to obviate this trouble, I propose to give my mode of treating *refractory* plates, being confident that many in our profession are laboring under the same difficulty I did for so long a time.

This presupposes that the operator has a perfect metallic die, to which the plate fitted accurately previous to the soldering process. When I find a plate warped so as to spoil its fit, I put it on the metallic die over which it was swedged, and oil the lingual side of the plate, and that part of the face of the die which the plate does not cover. I then mix plaster of Paris as if for a model, and pour it on the plate and face of the die, building up with the plaster about half an inch above the cutting edge of the teeth. After the plaster has fully set, remove it from the plate and model, and trim off all around the sides sufficiently, so that when placed on the plate again its edges will not touch the backings of the teeth, or even the solder. Trim the plaster, slightly tapering from the plate upward, and varnish the sides. Remove the plate from the die and place the die in its casting ring, (I use Lock's, and like them better than any other I ever saw,) face upward, and when the varnish is sufficiently hard to draw freely from the sand, place the plaster on the die in the same manner as when the plate was there; put the counterdie ring over the plaster and fill in around the plaster with moulding sand, holding the plaster firmly down with one or two fingers; pack the sand tightly, lift off the upper ring, lightly tap the plaster, and if your taps are true it will fall out easily. Replace the ring over the die and fill the space occupied by the plaster with melted lead; when cool, separate and trim off any little points of lead where the sand may have fallen off, and try it on the lingual surface of the plate, being sure that the lead does not touch any of the backings or even the solder; then place the plate on the die and observe the gums, that none of them touch the die; if they do, cut away the die a little at those points; then place the lead (which is in reality a lingual counterdie) on the plate, and put the whole into a large iron vice, screwing it up pretty tight. Upon removal, the plate will usually be found to fit the die very accurately. If, however, there is still some rock in the plate, place three or four thicknesses of paper, about half an inch long, just back of the chamber between the plate and the die, scrape off the lead correspondingly and give it another turn in the vice. No danger of breaking the teeth need be apprehended if the foregoing directions are closely observed. I have used it often within the last two years, and have the first tooth to break yet in the process, or the first warped plate to find which did not yield to it readily.

Clearfield, Pa.

RIMMING WITH AMALGAM.

BY P. H. CARDWELL.

THE following communication was received in reply to a written request from E. M. ALLEN, of Marietta, Ga., to the author, for a more specific detail of his method of preparing and applying amalgam to the finishing of plate-work.—ED.

"DEAR SIR:—I take pleasure in responding to your request, as follows: The edge of the plate must extend beyond the edge of the artificial gum, in order to give hold for the amalgam band. The plate should be thoroughly cleansed of all grease or other accumulation, with sulphuric acid diluted with water. From five to seven sheets of Jones & White's No. 6 gold-foil will make enough amalgam to finish a full set, forming the band, and filling the vacancies. Cut each sheet into three strips, put a small portion of mercury into a mortar, drop a few drops of sulphuric acid into it, work in the foil, one strip at a time, with a pestle, taking care to let the mercury come in contact with the whole surface of the foil, otherwise you will have trouble in working the lumps out of the amalgam. After the foil is mixed, press the mercury through buckskin, place the amalgam upon soft paper, such as is used in gold-foil books, dip the point of a knife, or any flat-pointed instrument, into sulphuric acid, and commence working the amalgam, moving it from place to place on the paper, until it adheres firmly to the point of the knife, or instrument, so that you can lift it by its adhesion; this it will not do until all the acid is absorbed, except what seems to be necessary to the perfect union of the metals. With the amalgam thus prepared, proceed at once to place it just where you want it on the job; you will, however, first take the buckskin used in separating the mercury from the amalgam, and rub the plate with that part through which the mercury has passed. Thus form a thin coat of mercury over the plate at such points as you may desire to place the amalgam. This will secure a perfect union of the amalgam with the plate. The amalgam being nicely placed, leaving it quite full, having the edge, where it extends over the edge of the gum, quite thick, and turned abruptly to the gum, so that when it is condensed it will not run out to too thin an edge, you should place the amalgam as nicely as if you expected it to remain without evaporating the mercury, condensing, etc.; care in this particular will enable you to get up a much nicer job. Now place the job on a sheet of paper, with the grinding surface of the teeth resting upon the paper; mix one-third of plaster to two-thirds of sand with water to a proper consistency to work well; pack this all round the outside of the job, letting it extend up to the lower edge of the amalgam, leaving it all exposed when the plaster sets; turn it over carefully, and cover the points of the teeth; also fill up both sides of the plate with plaster and sand, leaving no part uncovered except where the amalgam is placed. You are now ready for evaporating the mercury, for which purpose I use an evaporator made of sheet-iron, about six inches square and fourteen high, with a small pipe one inch in diameter running out at the top, to convey the fumes of the mercury into a stove or chimney, (this should always be done, as the fumes are quite deleterious.) The evaporator should have a door in one side extending almost from bottom to top, and be constructed inside so as to receive two small drawers, to contain any sized job when enveloped in plaster and sand. The lower part of the evaporator should be perforated all round, about an inch and a half up from the bottom, to admit air to the flame from the lamp. It should also have a hole in the bottom, of sufficient size to admit a flame about twice the size of that of a candle, from an alcohol lamp, which should contain a half gallon of alcohol. If the evaporator be properly constructed, it will evaporate the mercury in about twelve hours. When the mercury is all evaporated, the gold will assume its natural color.

"I refer to my article in the February number of the Dental Cosmos for the manner of condensing, etc., which I think sufficiently explicit.

"The teeth should be soldered to the plate in the usual manner, all superfluous solder removed, and the job pretty well finished, before the amalgam band is put on. After you have condensed the amalgam, if it should not be full enough, coat again with mercury, and add as much amalgam as may seem to be requisite; then proceed as before directed.

"The gold-foil amalgam will condense about one-third of its thickness.

"If one-third gold filings be added to the amalgam, it will not condense quite so much, but does not seem to be so tough while condensing, nor does it make quite so nice a job when finished.

"Knoxville, 1860."

LETTER FROM GERMANY.

BY S. DYER.

It no doubt will be gratifying to the many friends of Dr. Herman Rottenstein to learn that he has arrived safely in his native city, whither he was called by his eldest brother, Dr. John B. Rottenstein, also a graduate of one of your American colleges, who has been practicing successfully here and the surrounding courts for the last four or five years.

Finding it impossible to meet his extensive practice, which has more than doubled itself of late, he has associated his brother with him to share his labors, and I have no doubt that they will, in a few years, realize a rich harvest, as there are extensive fields all over Europe for American dental enterprise, notwithstanding the strenuous opposition of the *German horse dentists* and their guilds, remnants of the feudal system, which stick to them like the shirt of Nessus.

Frankfort-on-the-Main, 1860.

PROCEEDINGS OF DENTAL SOCIETIES.

PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

REPORTED BY GEO. T. BARKER, D.D.S.

A MONTHLY meeting of the Association was held on the evening of July 10th, 1860, at eight o'clock.

Vice-President, Dr. T. L. Buckingham, in the Chair. Present, Drs. Harris, McQuillen, Garretson, McGrath, Van Osten, Lukens, Townsend, and Barker.

The subject for discussion being

SALIVA,

was opened by Dr. McQuillen, who said, although the salivary secretion has been the subject of careful and long-continued investigation on the part of numerous observers, there is still a very decided difference of opinion among physiologists with regard to some important points connected with its composition, use, etc. Eminent chemists, for instance, have positively asserted that they found certain constituents present in this fluid, which others, whose statements are worthy of credence, have been unable to detect. Of late years it has been regarded as serving a mechanical, chemical, and dynamical purpose in the animal economy; quite recently, however, Claude Bernard, one of the greatest experimental physiologists of the age, after the most elaborate and careful experiments, assumed and still maintains that the purely mechanical influence formerly assigned to it is correct, the chemical influence being very slight, if not altogether absent.

Much of this diversity of opinion is no doubt due to the fact that the circumstances under which the examinations and experiments have been performed have differed with the various investigators; with some the saliva may have been examined immediately after being obtained, while in other instances it has no doubt been allowed to stand until a marked change has taken place in its composition. Again, many of the conclusions are based upon saliva obtained from glands whose ducts were connected with fistulous openings either established by disease, as in man, or for the purpose of experiment, as in the lower animals—valuable as such data are they cannot be exclusively relied upon, for the conditions under which the fluid was obtained certainly cannot be regarded as normal. To arrive at correct conclusions with regard to human saliva, it should be obtained under the most favorable circumstances and submitted to immediate examination. In such investigations no one can have more favorable opportunities afforded than those enjoyed by the dental practitioner. Entertaining views such as these, he had devoted some attention to the subject, but does not feel prepared at present to offer anything; but would direct attention to the propriety of determining the quantity of saliva secreted by an adult during twenty-four hours, a point which cannot be regarded as definitely settled, though the estimate may be correct. From the data obtained, in the observations of Mitscherlich, in the case of a man who had a fistula of the duct of Steno, it has been inferred that the amount of saliva secreted by all the glands in twenty-four hours is about ten ounces.

This may appear to be a very small quantity, but he is disposed to believe that it approximates to the average amount secreted in that period; for though on measuring the saliva voided by a patient seated in his operating chair for two hours, he found fourteen fluid drachms in the spittoon, which would be equivalent, if the fluid was secreted at the same ratio during the twenty-four hours, to twenty-one fluid ounces per day; it must be remembered, however, that it was obtained under circumstances calculated to augment the secretion rather than to induce a natural flow, as for instance, the irritation induced by operations upon sensitive teeth, by reflex action of the nerves, would increase the flow of saliva; at the same time, the jaws being wide open, the pressure of the muscles upon the glands, and the nerves distributed to them, would be additional excitants. This case alone cannot be taken as a basis to estimate the diurnal secretion, for when the muscles concerned in mastication and the tongue remain at rest, and the nerves are subjected to no unusual stimulation, the secretion is slight. Influenced as the flow of saliva is by extraneous circumstances, being increased by mental impressions, as the thought of sapid articles of diet, the presence of food in the mouth, the efforts of mastication, speaking, etc., in forming an estimate of the amount secreted all of these circumstances must be taken into consideration, and the conclusions must rest upon a long continued and carefully recorded series of observations.*

Alluding to the connection existing between the fifth pair of nerves and the salivary glands, he gave a minute description of a dissection he had recently witnessed by Dr. Woodward, on a dog, preparatory to performing a vivisection, demonstrating the recent discovery by Bernard of the motor nerve of the parotid gland.

In conclusion, he remarked that the *excessive* flow of saliva occasionally attendant upon dental operations, is one of the greatest annoyances that the practitioner is subjected to, and that every effort should be made, by the use of napkins, to protect the filling from becoming wet; but when these prove of no avail, rather than leave the cavity unfilled, as a last resort the "submarine operation" of filling under water should be performed. He had seen teeth thus filled years ago, and the operations are still in a perfect condition.

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* We have been informed by Dr. McQuillen, that in operating upon another patient, since the meeting, who was seated in the chair two hours, he collected two fluid ounces. And that subsequently, while engaged in writing, the head of course being held downward and the glands subjected to no stimulation, but the surrounding parts being entirely at rest, he voided in one hour three fluid drachms—equivalent to nine ounces in the twenty-four hours. This was between five and six o'clock in the afternoon. Immediately after dinner, on the following day (Sunday), he collected, under the same circumstances and during the same period, two and a half fluid drachms. This would seem to prove that, at least in his case, the flow of saliva is not augmented for some time after eating, but is rather decreased.—G. T. B.

Having referred to the various methods employed to protect fillings from becoming wet or submerged, he stated that when operating upon the upper jaw, and the saliva collects so rapid as to become troublesome to the patient, he suspends the operation and covers the tooth with a napkin folded several times, and then requests the patient to allow the saliva to flow into the spittoon, without closing the mouth. After this the operation is again resumed. In this way he has been enabled to keep fillings perfectly dry when the secretion was excessive; and prefers this plan to employing any of the apparatus that have been invented for the removal of saliva, regarding the difficulty of keeping them clean as a strong objection to their use.

Dr. Harris remarked, that he should like to hear an expression of opinion from the different members, upon saliva when it is in a vitiated condition, and of the effect upon the teeth when it had so deteriorated. He could not but believe that saliva, when strongly acid in character, acted upon the teeth in a most injurious manner, predisposing them to caries, and could recall instances where vitiated saliva acted as a solvent of the teeth, destroying them most effectually. The decay in such cases would usually be found upon the labial surfaces and at the necks of the teeth. This change in the nature of saliva was not confined alone to that secretion, as the same deterioration could be seen in the synovial fluids and the lachrymal secretion, as, upon their becoming vitiated by a diseased action of the system, they would act as irritants to the surrounding tissues, exciting them to inflammatory action. It was, therefore, an important consideration that, to prevent caries of the teeth, the saliva should be normal in character.

Dr. Garretson remarked, he scarcely knew in what direction to treat the subject under discussion, for were he to speak of the anatomy of the salivary glands, or even of their microscopical structure, it would be but to repeat something neither new or interesting to the gentlemen around him. Should he refer to the physiology of secretion, to the process of insalivation, to the digestive action performed by the saliva in connection with the secretion of the pancreas on non-azotized food, or, still further, trace the product to its expenditure in calorification, he should but present well-known truths which he supposed were familiar to every member present.

He thought, however, it might not be amiss to offer a few remarks on the pathological conditions of the saliva, as the subject was one of great importance to the dental practitioner who desired to practice his profession with the greatest amount of success, for while he had little faith in a practice which considered saliva only so far as its local effects are concerned, (striking at an effect without a consideration of the cause,) he felt free to declare, as the result of a somewhat close observation and experience, that the most successful practice would be found in a consideration of constitutional deteriorations, best judged of, so far as the dental specialty is concerned, in an examination and appreciation of the various conditions presented in the secretions of the salivary glands.

The very common conclusion to which most dental practitioners seem to arrive, is, that the teeth decay because the saliva is in an acid condition, without knowing or ascertaining why it is so; indeed, so commonly is this the case, that he has frequently to take from patients antacid prescriptions given them by their dentist, when, at the moment in which such prescriptions have been written, the teeth were being destroyed by salivary calculi which clung about them.

He remarked that if asked to define what he meant by healthy saliva, (which of course is a start-point first to be understood before any appreciation can be had of pathological conditions,) would answer that in a person of good health the secretion never seems abundant, possessing a carbonaceous-looking froth and has very little viscidity, is entirely free from odor and mixes with and loses itself in water. When saying the secretion never seems abundant, he would not be understood as implying that it was scanty, for, on the contrary, the mouth, fauces, and passages are kept in a condition of most wholesome moisture, and the apparent deficiency arises from the fact of the nice adaptation of the supply to the demand, the saliva passing on to the stomach as rapidly as formed.

This condition he would denominate as one of complete local health, and if caries existed in such a mouth, was convinced it was entirely independent of any salivary relation, for the secretion would be found neither alkaline nor acid, but neutral. It manifested also a state of general health, and caries would seldom be found except at certain points where there was a deficiency or imperfection of enamel, and even when thus existing would progress so slowly as to require but the most indifferent operations for its arrestation.

Pathological conditions of saliva may be due to local or constitutional disturbances, but his observation led him to infer that such difficulties must more frequently be looked for in the latter than in the former direction. He would briefly allude to a few of the local causes, and they were so simple and evident that the treatment suggested itself. Thus a local irritant long continued would deteriorate the salivary secretions by an over-stimulation of the glands, and this secretion, from its watery character, gives an acid reaction, the result of a deficiency in its neutralizing limy constituents. Saliva thus produced can scarcely, with justice, be called a secretion, but is rather the product or result of a passive condition of the organ, which from its exhausted condition is unable to produce a true secretion, and may be said to permit an exudation through its acini of a fluid allied to its normal product, being to a greater or less extent the serum of the blood, with certain half-formed salivary elements.

These irritants would be found present in stomatitis, broken or loose teeth, badly adapted artificial work, or the imprudent use of sialogogues. This saliva remaining in the mouth often becomes exceedingly viscid, but this did not seem, in his judgment, to be natural to the secretion, as it may be the result of mucous action on it while it is in the mouth, and thought that teeth subjected for a length of time to this condition would certainly be affected. He remarked that different constitutional causes which affect the salivary secretions could only be appreciated by the thoroughly educated practitioner. Scurvy, for example, induces the most marked change in the secretion, often, like ptyalism, giving to the breath an odor of the most offensive character. In the lower forms of fever the secretion is frequently rendered so deficient in its watery constituents that the mucous membrane, whose office in part is to moisten, becomes dry and clammy. Nausea, on the contrary, from whatever cause, generally induces profuse salivation; Hydrophobia excites the salivary secretion to an increased action; while mental impressions affect the glands quite variously—thus fear seems to paralyze them, while the sight of certain viands excites them profusely.

Some of the Exanthemata have a decided effect on these secretions, for even where the inflammation induced in the gland is not sufficient to be marked, it may perhaps be found in most cases to exist in a subacute form. Anæmia, Chlorosis, and kindred conditions would be found to be indirect causes of caries so powerful that without correcting the condition it would be useless to attempt to save the teeth through mechanical manipulation. And so he might continue through the different diseases of the system which more or less affected the salivary secretions, but thought the facts were as apparent to every member as to himself, and it would be but time misspent to repeat them.

He alluded to certain cases which he remembered were cited by Dr. J. D. White, while attending his course of lectures, which would prove that the views held by him in regard to the necessity for a constitutional, in connection, or rather preceding a local dental treatment, were entertained by that gentleman; cases in which Dr. White had refused to operate until a constitutional change had been brought about by the physician of his patient.

He would conclude his remarks with some objections upon keeping for sale regularly prepared tooth powder, by dental practitioners, and could no more understand how a dentist could prepare a dentifrice or wash applicable to all cases, than he could understand how the physician could make a similar formula for all diseases. The consideration given to the different conditions of the buccal secretions, during the evening, would lead even the disinterested observer to see the necessity of prescriptions based on the indications in each particular case. He always endeavored to be guided by these indications in his practice, and his prescriptions sent to a druggist were always written after a close consideration of the case and its particular features.

Dr. McQuillen remarked, that it was a matter of considerable moment in the preservation of the teeth, that the physician should pay some attention to the state of the saliva in the treatment of disease, as we are informed by reliable authority that in certain affections of an inflammatory type the saliva is invariably acid. Every dental practitioner is well aware that few patients pass through such affections, if long continued, without having their teeth seriously affected by the vitiated buccal secretions, the remedial agents employed in treating the disease, or inattention on the part of the patient to the claims of cleanliness. Again, during the period of utero-gestation the saliva is apt to present an acid character; this is no doubt due, to a great extent, to the demand made by the fœtus in utero upon the organism of the mother for the calcareous constituents previously eliminated with the saliva and other secretions, and which gives the former fluid its normal alkaline characteristic. All present no doubt can recall the vulgar adage, that "For every child the mother bears she loses a tooth."

As already remarked, the normal condition of the saliva is alkaline. We want no stronger proof of this than that afforded by the calcareous deposit which takes place around the teeth of nearly every one. The slightest change in the system, however, may convert it from an alkaline to an acid fluid. To counteract this tendency, tooth powders, useful as they are in their place, can exert but a slight influence. It must be through an improvement of the general tone of the system alone, that any truly beneficial change can be effected. In accomplishing this the internal administration of alkalies is unquestionably indicated.

Dr. Harris remarked, that he was seldom troubled with saliva in filling teeth, and never required an assistant to hold the tongue, or any of the appliances that had been spoken of by preceding gentlemen, to remove saliva or prevent its flow from the ducts. He used, in operating, but a few napkins, believing that if several are introduced, and the mouth of the patient is uncomfortably filled, the glands would be stimulated to excessive action and an increased flow of saliva would be induced. He has remarked that at the commencement of an operation the salivary secretion is greatly increased, but that it is gradually lessened as the filling progresses.

Dr. Garretson said, that as a mechanical difficulty to be overcome, saliva was the great drawback to operative dentistry, and thought it would be well for the profession to give more attention to this particular subject. It was most vexatious to work in a very wet mouth, while it was a positive pleasure to operate in a dry one. All must admit that it is very difficult to make a successful operation when the work has to be performed under water. This is due to several causes, it being extremely difficult to put in fillings, under such circumstances, that would be perfectly solid. Again, if the saliva is very acid, a certain amount will, during the operation, be absorbed by the open-mouthed tubuli bordering the cavity, and this acid, breaking down its equivalent portion of dentine, would of course destroy the integrity of the operation. He, however, overcomes the last difficulty by a very free use of Labarraque's solution, made weak, sponging out the cavity every few minutes, and giving it to the patient occasionally to hold in the mouth. He thought this practice eminently worthy the attention and imitation of members. He alluded to the sialagougic effect of napkins placed in the mouth, and remarked there were cases where it was much better to do without them. Patients, he thought, should be given some directions in the management of these napkins when used. Some persons by the constant movement of the tongue making it an impossibility to keep them in position. It would also be a good idea to prepare patients for operating by directing them occasionally to place a napkin between the lip and gum, commencing a week or more before the visit. Decoctions of Privet, made icy cold and held in the mouth a few moments before operating, would be found invaluable. He alluded to certain medicinal agents which influence the secretions, and broached the idea that their exhibition under some circumstances might be admissible. When there was no probability of finishing an operation before becoming wet, he never attempted the adhesive mode of working the gold, but used cylinders, pellets, etc.

Dr. Buckingham referred to the difference in the .quantity of saliva secreted in twenty-four hours, as given by different physiologists. Dr. Carpenter, for instance, says: "It is calculated by Bidder & Schmidt, that the average in man is about three and a half pounds daily; and high as this estimate seems, yet it is based on data apparently satisfactory."

He thought it true that caries is often due to vitiated saliva, induced by some constitutional derangement. Saliva is also a fluid that rapidly runs into decomposition, and as a consequence the chemist finds it almost impossible to analyze.

He has found that the salivary secretions are always greater immediately after eating, and particularly noticed this in the case of a fellow-practitioner, for whom he operated immediately before eating without inconvenience from saliva, but afterwards the flow was so excessive as to make dry filling impossible. In certain cases where the flow of saliva is excessive, does not use napkins, but relies upon pressure alone to make compact fillings.

The subject of

"THE EFFECT OF MEDICINAL AGENTS, CONSTITUTIONALLY ADMINISTERED, UPON THE TEETH,"

was chosen for next discussion.

EDITORIAL.

MAGNESIAE CITRAS IN ACUTE PERIODONTITIS.

IN the treatment of acute periodontitis during the first stages of the affection—simple vascular excitement or active congestion—we have frequently afforded speedy relief to the patient, though suffering intensely; and induced *resolution* in the parts implicated by the local application of two or three European leeches, combined with the prompt and decided exhibition of the magnesiæ citras. For though in many instances the morbid action is confined altogether to the capillaries of the part, and the inflammation is so slight that the mere scarrification of the gums, or the use of leeches at the furthest, is sufficient to allay the difficulty, in other cases it is increased and to great extent dependent upon a general disturbance of the economy; and the only plan by which the progress of the inflammation can be arrested and the suppurative stage averted, is by making a marked impression upon the organism.

We do not wish to be understood as advocating the employment of this agent as a specific, for other remedies will answer the purpose just as well, and in some cases a great deal better; but recommend it on account of its being, when administered in solution and flavored with a syrup, a palatable, and to some a decidedly agreeable beverage, and, at the same time, a mild saline cathartic. Making, as it does, a decided impression upon the alimentary canal, every portion of the organization, in addition, is more or less impressed by the liquid evacuations that ensue. For the salt being in the state of a concentrated solution, it causes an endosmotic action of the serum of the blood, which, passing into the intestines, not only increases the alvine discharges, but materially decreases the quantity of blood in the vessel, and thus relieves the local difficulty.

During the period of utero-gestation, in affections of the rectum, etc., violent cathartics must of course be prescribed with caution, and even a gentle laxative, such as this agent, under such circumstances should be used with very great care.

Although opposed to trespassing upon the domains of the medical practitioner, we cannot see any objection to the dentist suggesting the employment of remedial agents, if the patient does not demand a long-continued and varied course of medication, and at the time is not under the care of a physician; but should one be in attendance, or in a case of pregnancy, all of the general systemic treatment should be left to him, the dentist affording the necessary information with regard to the nature and character of the local difficulty, and performing the operations demanded.

It is of course unnecessary to dwell upon the importance of removing in the beginning all the local sources of irritation, such as devitalized pulps, foreign substances in the pulp cavity, and portions of tartar which may be far up under the gum and completely out of sight. J. H. M'Q.

THE SYRINGE.

One of the most useful and least dispensable instruments employed by the dentist in his daily practice is a good syringe; and though during the past few years it has been more and more generally adopted by the profession, there are many who do not appear to have recognized as yet the importance of adopting it. To those who in the earlier part of their practice employed the old plan of washing out the cavity of decay, or the pulp cavity, by means of a pledgit of cotton wound around the extremity of an excavator or probe, and then saturated with water, and who have long since abandoned that unsatisfactory method, it seems incomprehensible how any one can get along without the syringe. Throwing, as a good one will, a steady and powerful stream of water not only into a simple cavity, but to the very apex of the pulp chamber, all foreign substances or vitiated fluids are washed away in the most effectual and satisfactory manner.

As the injection of *cold* water upon a sensitive tooth or an exposed pulp is not merely *unpleasant*, but decidedly *painful*, the *invariable* employment of *tepid* water should be adhered to by the practitioner. To accomplish this, a small pitcher of hot water, kept constantly at hand, will afford means for qualifying the temperature of the water used.

These may be small matters, but they are all-important in the thoroughness and success of operations and the comfort of patients. J. H. M'Q.

REVIEW OF DENTAL LITERATURE AND ART.

BY J. H. M'QUILLEN, D.D.S.

Dr. John Snow.—The following extract is the opening paragraph of a biographical sketch, by Dr. B. W. Richardson, of the life and labors of the late Dr. John Snow, author of the most thorough and voluminous work yet published on anæsthetics:—

"There is not much credit in the mere acts of living and dying; in being driven by unavoidable fate through the common journey with shoulders uncovered and the whip over them; in doing nothing save the drudgery of existence; in enjoying, in an approach to the recognition of enjoyment, the brief dreams of childhood; in struggling into manhood; in battling through the after-strife obedient to the castigator behind; and in dying at last as though life had never been; dead to-day, wept for to-morrow, and forgotten by the morrow's succeeding sun. There is not much credit in this surely, for credit must be earned by something done beyond that which all must perforce do. But, in the face of all the struggles incidental to the existence, so to have managed as to have stolen out of time hours which other men knew not in their calendar; so to have willed and acted as to live on when death has done his worst; to assist all coming wayfarers in their conflict wherever they may meet it; to prove that there is something more in life than labor lost, and nothing more in death than an idea—Hoc opus hic labor est—in this there is achieved the grand attainment—the perpetual life."

According to the statements of the biographer, who knew him intimately, Dr. Snow was "one of the few who have thus realized the ideality of death."

Medical Department of Pennsylvania College.—In acknowledging the reception of the announcement of this institution, we sincerely trust, and believe, that the present able and energetic faculty will be encouraged and their labors rewarded, during the approaching and future sessions, by the matriculation of a fair proportion of the multitude of students who annually gather in the medical metropolis of the country.

Dental Review of London—May.

"Clinical Reports. (*From the Medical Circular, March* 28, 1860.) Cancer of the Face or Lip; Cancer of Tongue; Danger of Bad Teeth.—Mr. Erichsen has had recently two cases of cancer: one of the lip of considerable importance, and one of the tongue; the former in a laborer, aged fifty-six, admitted last July, the disease in the lip then having existed for ten weeks. The other case, cancer of the tongue, is that of a soldier sent up from Aldershott. It seemed this poor fellow had served twenty-one years in the army, in various hot climates. On admission he was sallow and emaciated, but otherwise in good spirits, and anxious to undergo the operation of removal of the cancer. The old insidious history of these cases was to be made out; namely, how two years before he observed an ulcer on the tongue, half-way between the apex and base; how this ulcer gradually increased in size and depth up to the present time, and was now so hollowed out as to contain half a walnut. A decayed and ragged tooth was, perhaps not without cause, blamed for this mischief—this fatal mischief—for, in addition to all this, it was now too evident there were extensive secondary deposits beneath the muscles of the neck, and operation of any kind was out of the question. The poor fellow died a little after his admission, from exhaustion, and what Mr. Erichsen believed was a condition of næcremia, or poisoning of the blood, the deposits in the glands of the neck being the chief cause of this. The true difference, however, between such cancroid growths and cancer, according to Mr. Erichsen, is, that in the former the secondary deposits never pass more deeply into the system than the lymphatic glands; while in true cancer we too often find that the cancer is again found in the liver or other internal viscera as a secondary deposit, the milder form of cancer so readily improved by chloride of zinc being also merely confined to the neighboring tissues—a purely local disease, so to call it. Mr. Erichsen, in referring to this case, made the gratifying statement that we have often mentioned as made also at Guy's, St. Bartholomew's, St. George's, etc., that he has known an interval of eight, ten, and twelve years to occur after removing a cancer of the lip, the patient bearing nothing more than the slight seam left by the operation. This disease in the scrotum, under the name of 'chimney-sweep's cancer,' we need scarcely say is due to the irritation of soot, which seems to act as an irritant, like the rotten and jagged tooth against the tongue in the case of this poor soldier. In the second case above referred to, Mr. Erichsen thought it advisable to remove a diseased gland under the jaw deeply placed in relation to the external carotid, passing also under the facial artery: this was effected, and it is hoped the case will now do well."

"FIBRO-GELATINOUS TUMOR OF THE UPPER JAW; DISEASE OFTEN MET BY DENTISTS.—MR. FERGUSSON, in removing a fibro-gelatinous growth from the alveolar ridge on the right side of the face of a young woman, one of his last days of operating at King's College Hospital, made his customary but useful remarks on the best mode of getting at the deeper parts of the face, antrum, alveolus, etc. Taking advantage of the natural groove in the middle line of the upper lip, Mr. Fergusson makes his first incision here; and then, by carrying the dissection back to one or both sides, as the case may require, or into the nose—(all easily and correctly done under chloroform)—he finds it a very simple process indeed to get at any part of the alveolar ridge, or parts adjacent to the antrum, and generally, as for instance in the present case, without any deformity or ugly scar on the cheek remaining behind. We are almost afraid to say what amount of cutting and ugly cicatrixes we have, from time to time, witnessed in patients' faces from the fearless and rough surgery of former days, still observed as a legend in more than one of our leading hospitals. But chloroform and silver wire sutures, and the steady modern thoughtfulness of men like Mr. Fergusson, who blend stormily, now and again, with a good deal of the 'fortiter in re,' some occasional sunshine and delicacy of the 'suaviter in modo,'—men like Mr. Fergusson, who observe all the most minute and accurate details of their cases, for their patients' benefit, have worked a revolution in the surgery of the 'olden time.'

"The growth in the present instance, as already said, affected the upper jaw-bone, extending in a manner calculated very terribly to frighten many of our span-new odontological graduates, who will be shortly operating in such dentist cases; all along the jaw-bone, from the second incisor tooth to the second molar tooth, a tumor of a doubtful fibro-gelatinous nature, something like the probably cancerous or fibro-gelatinous polypus previously referred to. The alveolar ridge appeared, indeed, destroyed—but this was not all, as the tumor had got, too, into the antrum; but whether it first arose in the antrum or in the alveolus, was difficult to decide. Mr. Fergusson, after a careful dissection, as just described, from the mesial line back through the upper lip, *ala nasi*, and cheek, had resort to his peculiar clipping forceps, first clipping away the alveolar ridge, and then attacking the portion of disease in the antrum and vicinity, and thus somewhat freely laid open the antrum and nostril, ultimately reducing the entire disease."

THE DENTAL ENTERPRISE—JUNE.

"ADVICE TO A STUDENT OF MECHANICAL DENTISTRY, by PROFESSOR AUSTEN.—Etymologically an operator is 'one who works.' The surgeon who works upon the human body is an *operator*, while the artisan, or factory hand is an *operative*. The higher order of education of the former class gives to the same word in one termination a higher place than in the other. It is much to be feared that the dental ranks number more operatives than operators.

"Again, a mechanic is one 'who plans, constructs, and executes with skill.' The original Greek word carries with it the idea of management and contrivance, hence involving the exercise of thought. But practically, as in the previous case, although there is no corresponding difference in termination, we have the two classes—one laboring by routine without thought, the other exercising judgment and reflection. Unfortunately, the first class is the more numerous; hence the mechanic too often takes rank with the operative. Of this *par nobile fratrum* the dental profession has its full quota.

"If the dental *operative* claims precedence of the mere dental mechanic, it must be on the ground of the greater chance he has of doing irreparable mischief, and so far forth he is the greater disgrace to his calling. It is quite common to speak contemptuously of this or that one as a very excellent 'plate-workman,' but 'no dentist.' The chances are that the speaker might as truthfully be called a 'gold packer, but no dentist.' Probably both have an equal amount of ignorance and assurance; but the mechanic *must* have some skill, while the operative need not of necessity have any. In truth, I can name no pursuit that involves a more invitingly small outlay of capital, and more temptingly infinitessimal expenditure of brain force than that of a dental operative. It is most unfortunate for this class that the community require of them some knowledge of the more puzzling details of dental mechanism.

"But when this strife for rank is between the operator and the educated mechanic, it may properly claim serious attention. In behalf of the too long neglected mechanical dentist I deny that the operator has any ground for his assumption of superiority, either in respect of the kind and degree of skill required, or the amount of scientific knowledge demanded, or highest excellence in their respective departments.

"In the question of hand-craft the latter certainly holds an inferior position, if number and difficulty of details are any just criterion; while in the matter of science, taking only what is essential for correct practice in each branch, the mechanic must read as much and think as much (I will not say *more*, though I believe it) as the operator. The scarcity of first-class operators is urged in proof of the difficulties to be overcome; as scarce, some will say, as white crows. But are not first-class mechanics rarely met with? Black swans are not harder to find.

"But I did not, in these papers, contemplate a detailed comparison of the two; I will, therefore, briefly sum up the whole matter with this advice: If you seek that branch of dental practice which may be most quickly learned, which requires the least amount of collateral study, which needs less outlay of capital, which permits most imposition, and most easily allows an unprincipled slighting of work and concealment of inability, which is the most remunerative and at the same time the least vexatious and troublesome, do *not* make choice of the mechanical."

In presenting the above we cannot but express surprise, mingled with regret, that the writer should deem it necessary to notice the comments of a few small minds who are incapable of fully appreciating the attainments and skill demanded in mechanical dentistry; and that while defending this branch of the profession from unjust aspersions, he should indulge deprecative remarks relative to operative dentistry.

Believing that in the management of a large practice, at least, it is impossible for one person to do justice to each department, and that the interests of the profession and the community would be better served by practitioners confining their attention exclusively to one branch or the other, we still cannot see why there should be any clashing of interests, rivalry, or excuse for trying to exalt one by depreciating the other.

DENTAL REGISTER OF THE WEST—JULY.

"DENTAL SURGERY. By P. G. C. HUNT. [A paper read before the Local Medical Society of Indianapolis, Indiana.]—Dentistry is said to be a specialty of medical science, and, though the profession is prone to regard (and perhaps often justly) the assumption of special attention to, and skill in one branch of medical science, as savoring of the unclean thing, charlatanism, yet we are proud to say and believe that dental surgery and mechanism is worthily taking a stand far in advance of what in former years it occupied, and that too with the full concurrence and entire approbation of the whole medical profession. The progress of the dental art within the last half century has been truly astonishing. Then how meagre its literature, how few its intelligent practitioners, and how comparatively unsatisfactory the best skill in the world; and how numerous were the pretenders to this liberal art, whose utter ignorance and dishonesty brought contempt upon themselves and distrust upon the profession! and until comparatively recent date it is to be confessed, we imagine, that medical knowledge partook more of a theoretic or speculative tendency than at the present day.

"Men of science felt inclined to allow surgery and everything mechanical connected with the healing art to remain in the hands of barber-surgeons, and gradually only did general surgery assume its present rank in the arcana of medical science. The history of science is a parallel case. Separate from it a knowledge of general and comparative anatomy, physiology, chemistry, and therapeutics, and what is there left? Why, not enough of vitality to keep it from relapsing into the shades from whence the last half century rescued it. A knowledge of medical science and its collateral teachings is the foundation upon which modern dentistry rests, and we can refer, with perhaps pardonable pride, to American dental literature as the evidence of progress in theoretical and practical knowledge in this specialty, and the advance toward perfection in the mechanical department of the profession is more rapid at this time than at any former period, and the dentist who operates to-day precisely as he did ten years ago is behind the times, and fails to give his patient the benefit of much that has been learned and tested in that time.

"Much that was formerly considered impossible in practical dentistry, is now a matter of every-day operation, as, for example, the restoration to health and usefulness of a tooth, the pulp of which is exposed by decay of bone, or even when after destruction of the nerve pulp suppurative inflammation has attacked the adjacent tissues, success in such an operation would scarcely have been hoped for a few years since, while at this day any dentist who keeps pace with the advance of the profession will undertake without hesitation to perform such an operation, time and expense being considerations for the patient.

"That there are important considerations for a general practitioner to be found in connection with those parts of the physical system which pertain to dental education, is without doubt more or less known and acknowledged by the medical profession. But that the full measure of relation between the various conditions of disease, loss of natural organs, enervating salivary secretions, impure exhalations issuing from the mouth contaminating the air we breathe, is not fully understood, cannot admit of a doubt, all of which and more it is the special province of dentists to investigate and endeavor to remedy. The full relations between these conditions and other parts of the animal economy, in relation to general diagnosis, curative and sanative measures, are not generally accorded by physicians. In endowing man with a complex structure, and arranging the multitude of glands, organs, and tissues intimately connected with each other—the lips, the tongue, the salivary glands, and especially the teeth—reasoning, *a priori*, we should suppose are of such importance to a healthful state of the animal system that their loss or an impairment of their functions would result in a disturbance of those other organs with which they sustain the most intimate relations. Nor will it be found that such reasoning is fallacious. Any one who has had occasion to observe the general health of a person during a series of years, which shall include a period extending from a time when the teeth are healthful, intact, and performing fully the duty of mastication, through the various gradations of disease, decay, and loss, will inevitably discover dependent impairments of the digestive functions. Solid food or that which is possessed of moderate adhesion of its particles, no longer submitted to the grinding of the dental organs, and a thorough admixture with salivary secretions, is passed into the stomach unfitted for the ready action of that organ. Such an occurrence repeated daily, almost hourly, wearies out the ability of the digestive apparatus, and though the wonderful adaptability of the animal organism is sufficient to withstand, for a time, this unnatural condition, its continual recurrence finally produces the most deplorable results—the external indications of which are irritability of temper, sallow complexion, pinched expression of countenance, and every indication of a confirmed dyspeptic, not to speak of a loss of the natural contour of the face, and inability to articulate with distinctness.

"Every general practitioner will recognize the sequence which we have described, yet not every one, it is to be apprehended, if consulted by a patient suffering under those circumstances, would recognize the important aid to be derived from the skillful services of an intelligent and conscientious dentist. But too frequently in such cases will the general practitioner, after ascertaining debility and vitiated action in the digestive functions, substitute these for primary indications, and found a treatment on a partial diagnosis of the case. The insalivation of the food is strictly a mechanical operation, its trituration and commingling with the secretions, its preparation into a bolus, and its deglutition, are all purely of a mechanical nature; and a loss of those implements used in any of these processes of course renders such process defective or impossible.

As well might the miller expect to produce a double-extra quality of flour, his nether millstone being missing, as to expect a mouth deprived of *grinders* to prepare proper digestible material for the stomach. Now one province of the dental art is to supply a substitute for the loss of natural parts, and just so far as this can be done with success, should it be estimated, and receive the meed of favor which is due.

"Foreigners say of the American people, that we spend too short a time at the table, and they ridicule, with great apparent zest, the American method of 'bolting food,' and they argue with seriousness that mastication can not be sufficiently performed in the hurried manner in which Americans swallow food. Is there not reason in their more leisurely manner of satisfying the appetite? Evidently more perfect preparation of food can be had by eating with slowness.

"In ruminating animals we find that perhaps one-third of the twenty-four hours is spent in masticating the food; in strictly carnivorous tribes, food is generally taken from necessity at considerable intervals, and instead of a masticatory process long protracted, the food is cut into pieces adapted to their purpose, having teeth not suited to comminuting or grinding their food. Man, who occupies, with respect to teeth and digestive system, an intermediate position, is possessed of dental organs indicating that though he is not adapted to chew the cud like the former, neither should he be content, like the latter, to cut it into morsels fitted for the largest capacity of the œsophagus. Reason, experience, and observation, alike concur in pointing out the propriety of a thorough mastication of every solid edible, and those possessing imperfect grinders should occupy a time longer, if necessary, or their food should be of such a nature as to require less trituration to reduce it to a proper consistency.

"In civilized societies the teeth are among the first organs of the body to exhibit the deleterious effect of artificial and unnatural methods of living, and this may be observed in their formation, which, in the period of development, ill health and lack of appropriate nourishment may render defective. And in maturity, when, though they may be normal in structure, they yield to the powerful solvents which bad digestion may produce, or bad taste select as condiments. When during the period of second dentition the health of a child is imperfect, observation will warrant us in predicting with a degree of accuracy that the teeth will be abnormal in their constituents, a deficiency in their gelatinous elements is mostly observable. They possess a whiteness of color which is unnatural, they are friable and imperfectly protected by enamel, and not unfrequently their position and arrangement is irregular, and also we think that we have observed this connection between the development of teeth and the general system, that large perfect teeth are associated with large healthful bodily development, and *vice versa.* And as teeth are formed and their size determined before the completion of development of other portions of the system, does it not sometimes happen that the physical growth of an individual may be prematurely brought to a stand, and he possess teeth suited for a larger stature? We conceive we have observed this to obtain in many instances; we do not suppose that in a physiological condition the teeth should invariably bear a precise ratio in size to physical development, but we think that an approximation can readily be discovered by attention, much more so than in the hand or foot or other organs of the body. Without doubt it can be said, that the general practitioner does not lose sight of the diseases of the mouth, but the dentist who makes these diseases his specialty should be awarded that position by the medical profession that his acquirements as a specialist seem to demand.

"Eminent minds have often admitted that a single department of science is sufficiently comprehensive to occupy the attention for the entire life of one man. With the dentist in full practice, it is a matter of everyday occurrence to see mouths so replete with salivary calculus and accumulated filth, as to leave no doubt in the mind of any one who reasons from cause to effect, that to this cause, in many cases, might with truth be referred disturbances more or less serious in the alimentary canal and lungs. Again, that most distressing disease, facial neuralgia, which is considered unmanageable and eccentric, in a large proportion of cases, by a careful diagnosis will be found to depend upon the diseased pulp of some offending tooth. In whatever light dentistry may be viewed, it will be evident to an unprejudiced mind that it has claims to be admitted to the favorable consideration of the medical profession, whether as a collateral branch of the healing art, or as means of relieving human suffering and contributing to the comfort and happiness of mankind."

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SOUTHERN DENTAL EXAMINER—JULY.

"NATIONAL DENTAL CONVENTION. By GEORGE S. FOUKE.—The convention which is to meet in Washington, D. C., July 31, 1860, will present an interesting phase of associative effort for the promotion of dental science and art. It is proposed to establish a 'National Association' upon a representative basis. The national society presupposes the existence of State and local societies, which are to elect members, *pro rata*, as delegates to the National body.

"The South cannot, from present appearances, be very largely represented in the approaching convention. And why? Because there are only *three* societies at this time known in the South. Virginia has a society; North Carolina has one; Georgia one. Others may be formed yet in time to elect members to the convention, which we think is the duty of all Southern dentists to do. We should like to see a general movement in this direction. Let the dentists of every State organize at once. Let it be remembered that the ordained line of dental progress is associative effort. Twenty years ago there was no such thing as a dental society in America. In 1839, Dr. Hayden, of Baltimore, got 'together certain dentists' in New York City, and the *associative principle* was then put to work. The result of 'Hayden's *action*' is known and felt wherever dentistry is known and practiced. The progress of the past two *decades* is greatly if not almost entirely the result of 'association' in the profession.

"We have often wondered why the dentists of the Southern States do not form and establish societies. It is time to *act!* 'Action' is everything. Supineness accomplishes nothing.

"As a Maryland dentist, we blush to think there is no State dental society in Maryland. Only think of it! The State that holds the ashes of Hayden—the 'prophet who struck the rocky Horeb of the dental heart, and forth gushed a stream of intelligence, gladdening our thirsty tribe'—has no dental brotherhood worth the naming, and no State representative in the 'National Convention!'

"Can the Association about to be formed at Washington be considered *National*, if it has no representation from the 'Old Maryland Line'? Hardly."

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEO. J. ZIEGLER, M.D.

"*Continuation of Study of the Motor Nerve of the Parotid Gland.* By M. CLAUDE BERNARD.—In our last lecture we made allusion to sundry experiments suggested to us by the discovery of the motor nerve of the parotid gland. These experiments we have succeeded in performing during the past week, and we are now in a position to lay before you the results which we have obtained.

"The motor filaments of the parotid gland have their origin, as you already know, in a branch of the auriculo-temporal nerve. That which we were principally desirous of ascertaining was, whether in dividing this latter trunk the secretion of the gland would be completely suspended. This, as we found, is precisely what takes place. As after section of the facial in the interior of the cranium all kinds of stimulants applied to the interior of the mouth are powerless in bringing about the parotidean secretion; so when the auriculo-temporal nerve has been divided, vinegar, sapid substances, and other excitants of the same secretion produce no effect whatever on animals subjected to this operation. Vinegar applied to the inside of the animal's mouth gives rise to gustatory sensations, followed by movement of the jaws, but no secretion is observed to take place, or at least if a drop or two be remarked at the extremity of the tube, they must have been remaining in the duct, the consequence of the previous application of galvanism to the peripheric extremity of the nerve. This is a source of error which it becomes the duty of the physiologist to guard against.

"The nerve having been carefully isolated in a living animal, we then divided it with a view to the galvanization of its peripheric extremity. The results which we thus obtained are striking; an abundant secretion takes place, and the venous blood is remarked to become a bright red, a phenomenon invariably observed when the glands are in a state of activity, as we shall find by-and-by while studying the history of the secretion of the submaxillary body. The nerves which preside over this last-mentioned secretion possess a much greater amount of sensibility than those which characterize the motor filaments of the parotid. The action of a given current of electricity exercises a much more considerable influence over the chorda tympani than it does over its congener. By means of the apparatus invented by Dubois Reymond, which enables us to measure the intensity of the current of the galvanic fluid employed, it is easy to demonstrate this remarkable difference. In fact, in order to produce equal effects on the two glands, the nerve of the parotid must be acted on by a galvanic current, the force of which is indicated by seventeen divisions of the instrument in question, whereas the force of the current required to act on the chorda tympani would be represented by twenty-seven divisions; the difference is thus very marked. Results of a precisely analogous kind are obtained if we apply vinegar and water to the tongue of an animal (tubes having been previously introduced into the two excretory ducts), for in this case we see the submaxillary gland commence secreting under an influence which does not produce the slightest effect on the parotid. It must not, however, be supposed that the chorda tympani enjoys, if I may so express myself, an elective affinity for the electric fluid; no, all kinds of excitants possess in an equal degree the power of making a more sensible impression on this nerve than on its congener. A phenomenon of an analogous nature is observed in reference to the different groups of muscles concerned in locomotion. And you know that, as a general rule, as regards external agents, organs differ very considerably the one from the other. The action of medicinal agents, and of poisons, furnishes us with daily proofs of this.

"But we are in possession of a variety of means wherewith to modify, to increase, or to diminish at pleasure, this relative sensibility. If, for example, after having divided the great sympathetic nerve, on one side only, we galvanize the chorda tympani of an animal on which this operation has been performed, it will be seen that the gland which has been deprived of the nervous influence of the great sympathetic becomes much more sensible to the action of the galvanic fluid than that of the other side; and in support of these experiments we may refer to numerous well-known facts which prove how much the sensibility is increased by the section of the great sympathetic, as is evidenced by the increase of temperature in those organs which have been subjected to this kind of mutilation. If you divide, on one side, the branches of the great sympathetic which supply the globe of the eye, you will very soon remark a notable hyperæsthesia of the conjunctiva follow on the operation. Why, therefore, should we be surprised at this antagonism existing between the great sympathetic and the motor nerves which preside over secretion, which our recent experiments have made us acquainted with? Do we not know that the great sympathetic causes the vessels to contract, while the nerves which preside over the secretion have precisely the contrary effect? The same is the case with reference to the parotid gland.

"The effects which follow on the section of the great sympathetic do not in the slightest degree controvert what we announced to you as regards the relative sensibility of the two glands—the parotid and the submaxillary. We shall now give you an experimental proof of this. Here is a dog: we have introduced, as you will observe, a tube into Steno's duct, and another into that of Wharton; we have isolated the motor nerve of the parotid, and also the chorda tympani which regulates the secretion of the submaxillary; having divided both these nerves, we shall now proceed to galvanize their peripheric extremities, and as the apparatus which we employ permits of our comparing the different degrees of force used in each experiment, it will not be difficult to compare the relative amount of sensibility possessed by these two glands.

"(The experiments are made in accordance with the above-mentioned conditions: a very feeble galvanic current is employed in the first instance, and a flow of saliva is almost immediately observed to take place from the tube attached to the duct of Wharton, while the parotid gland is not in the slightest degree affected. It is only after having gradually increased the power of the galvanic current to a much greater degree, that a few drops of liquid are seen to issue forth from the tube attached to Steno's duct.)

"We shall now, gentlemen, show you the effects produced by the division of the great sympathetic. (This nerve having been cut, in the case of the same animal, galvanization of the chorda tympani is recommenced, and a current much more feeble than that employed in the previous experiments, just made, is seen to produce an almost instantaneous flow of saliva.) We consequently arrive at the self-same conclusion come to at the end of the preceding lecture, but, on this occasion, by the experimental method, viz.: There exist two classes of nerves destined to supply all glands; the one, derived from the great sympathetic, which presides over the contraction of their vessels and diminishes the flow of their secretions; the other taking their origin in the principal motor branches which ramify in the immediate vicinity of the glands. The latter class are destined to produce dilatation of the vessels, and an abundant flow of aqueous fluid more or less charged with the ordinary materials which characterize the secretions in each particular case."—(*Med. Times and Gaz.*, May 5.)

"*Method of Painting Moist Anatomical Preparations.* By H. D. SCHMIDT, M.D.—It is more due to neglect than any other motive, that I have not published, before this, the useful process of painting anatomical preparations, intended to be suspended in alcohol. The latter, as is known to every anatomist, affects the color of the different components of an organ, and thus renders them almost alike in appearance. This is a great disadvantage, as the object of such a preparation is to show the relationship of the various parts of an organ, or that of different organs themselves. For instance, if the larger blood-vessels and ducts of a liver or kidney, etc., are injected and carefully dissected out, to exhibit their relative course, such a preparation will be of comparatively little value, if these vessels cannot be readily distinguished from each other. This can only be accomplished by painting them with different colors. In dried preparations, this is easily done by coloring with oil-paint, commonly used by artists. But as the tissues of such preparations lose entirely their form by shrinking, they are rendered to a great extent unfit for study. It is different, however, in the case of preparations intended to be preserved in a moist condition by suspension in alcohol. Here, the anatomist often becomes discouraged, when he finds his best dissections losing in appearance by the injurious action of the alcohol on the color of the tissues. To counterbalance this disadvantage, I have used a vehicle which, while it unites with the tissues, and thus adheres to them, is not affected injuriously by the action of the alcohol, but, on the contrary, rendered only more firm. The process is so simple, that it seems rather strange not to have been resorted to long ago. The principle used as a vehicle is *albumen,* in the form of the white of egg; and this is almost the only substance which will unite with the tissues, (as a great part of the latter consists of it,) without being injuriously affected by the alcohol. The colors used, of course, must be mineral, and thoroughly ground with the albumen, on a plate of glass. After the preparation is painted, it is put into strong alcohol, which, to coagulate the albumen still more firmly, may be warmed. Not only the blood-vessels, ducts, and nerves may thus be beautifully colored, but, with some artistical skill, the color of the parenchyma of the organ may also be nicely imitated.

"In the Anatomical Museum of the University of Pennsylvania, a liver, with the blood-vessels and ducts carefully dissected, and painted with different colors by the above described process, can be seen suspended in alcohol. Likewise a kidney and a spleen; the color of the fresh parenchyma of the former is also imitated. These preparations I made three years ago, and up to the present time not the slightest change in the colors can be perceived, although they have often been carried to and from the lecture-room. Another preparation, exhibiting the smaller muscles of the larynx, which are painted red, can also be seen. Intricate dissections of various regions can be made, the muscles, vessels, nerves, etc. colored, and their *forms preserved* by the suspension in alcohol.

"In connection with this subject, Dr. Leidy stated that he is in the habit of suspending injected preparations in turpentine, by which liquid the tissues are rendered translucent. The jars in which they are thus suspended are hermetically sealed by means of a piece of hog's bladder, well soaked and dipped in a cement of gum-arabic, acetic acid, and sugar. In order to suspend the preparation, a piece of whalebone or a bar of metal should be used; wood is too porous. Thus arranged, the turpentine remains perfectly limpid.

"Dr. Leidy added that, in these preparations, some change must take place in the air over the turpentine, for the bladder covering the jar bellies down, becoming concave. To give, therefore, a neater appearance to the preparation, he is in the habit of applying a second piece of bladder, prepared as the other, in which a small orifice is made with a pin, which prevents its retraction into the neck of the jar.

"Mr. Slack stated that in England, glycerin was extensively used for mounting preparations, the high price of alcohol in that country preventing its general use for such a purpose."—(*Proc. of Biological Dep. of Acad. Nat. Sciences, Phila.*)

"*On Parotidean Ephidrosis.* By Dr. Rouyer.—By this title Dr. Rouyer indicates the occurrence of a discharge of fluid from the surface of the skin of the parotid region in persons who have suffered from parotiditis. He has met with two such cases. 1. J. A., aged forty, was wounded eighteen years since by a ball which, traversing the orbit, passed out behind the ear. Since then, whenever he eats, the skin of the parotid region becomes covered with droplets of a thick fluid resembling saliva. 2. A woman between thirty-five and forty years of age, exhibiting the same phenomenon, related that, three years before, she suffered from severe inflammation in the parotid region, since which time whenever she masticates, this exudation takes place. P. Bérard, in his Physiology, relates the case of his own father, whose cheek during a repast reddened, while an abundant flow of saliva issued hence without there being any sensible orifice to give it passage. This supervened on abscess of the parotid. The author is at some loss to explain the nature of the occurrence, especially as the fluid does not present the chemical characters of saliva.

"Dr. Brown-Séquard, commenting upon this communication, observes that similar facts have been recorded by Stannius, Henle, H. Holland, Giesker, and Oesterlen; but that most of the cases are, in fact, only examples of an increase of the secretion of the sweat of the face, which usually accompanies gustation and mastication. Not only is the fluid far more abundant than in the normal state, but its nature is more or less modified; but surely it would be wrong to regard the fluid as saliva only because it is secreted during meal times. In a great number of persons more or less sweat appears on different parts of the face under the influence of a considerable stimulation of the nerves of taste. It is by a reflex action that this secretion is produced, occurring both in summer and winter, but more abundantly in winter. M. Brown-Séquard refers to his own person in which this peculiarity exists as already recorded in the

Comptes Rendus de la Societé de Biologie, 1849. Whenever he excites the nerves of taste by very salt, very sweet, or very spicy aliment, this secretion is produced. It does not depend upon mastication, for aliments of little savor and long masticated do not give rise to it, while a very sapid body held in the mouth a few minutes without mastication does so. Barthez relates a case in which one side of the face sweated abundantly on the application of a little salt to the same side of the tongue.—(*Journal de la Physiologie; Med Times and Gaz.*, June 23.)

"*Man Scientifically Described.*—In a recent lecture, delivered before the Royal Society in London, by PROFESSOR OWEN, D.C.L., F.R.S., as reported in the *Engineer*, he described man as a specimen of organic nature, as follows: The fourth and highest type of mammalian brain rises at once, and without transitional rudiments of the hippocampus minor, hinder horn of lateral ventricle, or concomitant lobe of cerebrum protruding backward beyond the cerebellum, to that marvelous structure which is peculiar to our own species. The sole representative of the archencephala is the genus homo. His structural modifications, more especially of the lower limb, by which the erect stature and bipedal gait are maintained, are such as to claim for man ordinal distinction on merely external zoological characteristics. But his psychological powers, in association with his extraordinarily developed brain, entitle the group which he represents to equivalent rank with the other primary divisions of the class mammalia, founded on cerebral characters. In this primary group man forms but one genus—homo—and that genus, one order, called bimana, on account of the opposable thumb being restricted to the upper pair of limbs. The mammæ are pectoral; the placenta is a single, sub-circular, cellulo-vascular, discoid body.

"Man has only a partial covering of hair, which is not merely protective of the head, but is ornamental and distinctive of sex. The dentation of the genus homo is reduced to thirty-two teeth by the suppression of the outer incisor and the first two premolars of the typical series on each side of both jaws, the dental formula being:—

$$i.\frac{2-2}{2-2},\quad c.\frac{1-1}{1-1},\quad p.m.\frac{2-2}{2-2},.\quad m.\frac{3-3}{3-3}=32.$$

All the teeth are of equal length, and there is no break in the series; they are subservial in man not only to alimentation, but to beauty and speech.

"The human foot is broad, plantigrade, with the sole not inverted, as in the quadrumana, but applied flat to the ground. The leg bears vertically on the foot; the toes are short, but with the innermost longer and much larger than the others, forming a "hallux" or great toe, which is placed on the same line with, and cannot be opposed to, the other toes; the pelvis is short, broad, and wide, keeping the thighs well apart, and the neck of the femur is long and forms an open angle with the shaft, increasing the bases of support for the trunk. The whole vertebral column, with its slight alternate curves, and the well-poised, short, but capacious sub-globular skull are in like harmony with the requirements of erect position.

"The widely separated shoulders, with broad scapulæ and complete clavicles, give a favorable position to the upper limbs, now liberated from the services of locomotion, with complex joints for rotary as well as flexile movements, and terminated by a hand of matchless perfection of structure—the fit instrument for executing the behests of a rational intelligence and a free will. Hereby, though naked, man can clothe himself and rival all natural vestments in warmth and beauty; though defenceless, man can arm himself with every variety of weapon, and become the most terribly destructive of animals. Thus he fulfills his destiny as the supreme master of this earth and lord of lower creation."—(*Scientific American*, May 26.)

"*The Instinct of Appetite.*—Chemical analysis and physiological research have established, beyond dispute, that every article of food and drink is composed of elements differing in quantity or quality. It is equally true that the various parts of the human frame are different in their composition, as the bone, the flesh, the nerve, the tendon, etc. But there is no element in the human body which is not found in some article of food or drink. A certain normal proportion of these elements, properly distributed, constitutes vigorous health, and forms a perfect body. If one of these elements be in excess, certain forms of disease manifest themselves; if there is not enough, some other malady affects the frame. When the blood contains less than its healthful amount of iron, it is poor, watery, and comparatively colorless; the muscles are flabby, the face pale, the eyes sunken, the whole body weak, the mind listless and sad. If the bones have not enough lime, they have no strength, are easily bent, and the patient is rickety; if there is too much lime, then the bones are brittle, and are broken by the slightest fall or unusual strain. The highest skill of the physician in these cases, consists in determining the excess or deficit of any element, and in supplying such food or drug as will meet the case; when the medical attendant cannot determine what is wanting, nor furnish the supply, nature is often loud enough in her calls, through the tastes or appetites, to indicate very clearly what item of food or drink contains the needed elements; this is the 'Instinct of Appetite.' Chemistry is unable to say of but one article of human food, that it contains all the constituents necessary to supply the human body with every element requisite for its welfare, and that is pure milk, as supplied by the mother of the new being; but after the first years of life, the body demands new elements, in order to enable it to meet the duties which increasing age imposes; hence nature dries up this spring as being no longer adequate, and compels the search for other kinds of sustenance, showing that milk is a proper sole food for the young ones; and healthy grown persons who live upon it mainly will always become invalids.

"All kinds of life, whether vegetable or animal, have within them a principle of preservation as well as of perpetuity; were that not the case all that breathes or grows would die; this principle or quality is common to man and beast and all that springs from root or seed; it is named 'Instinct.' It is instinct which calls, by thirst, for water, when there is not fluid enough in the system. It is instinct which calls for food, by hunger, when a man is weak and needs renovation. It is curious and practically valuable as a means for the removal of disease, to notice the working of this instinct, for it seems to be almost possessed with a discriminating intelligence; certain it is, that standard medical publications give well-authenticated facts showing that following the cravings of the appetite, the animal instinct has accomplished far more than the physician's skill was able to do; has saved life in multitudes of cases when science had done its best, but in vain."—(*Chemical News*, June 9.)

"*On a Case of Fracture of the Superior Maxilla and its Treatment.* By James Salter, M.B., F.L.S., Surgeon-Dentist to Guy's Hospital.—I have thought that the profession might be interested in the particulars of a case of fracture of the superior maxilla, in which I adopted an unusual, and, as far as I know, a new mode of treatment.

"My patient was a young gentleman, the son of a clergyman in Berkshire. On Saturday, April 17, 1859, while playing cricket, he was rushing with great impetuosity to catch a ball, when one of his companions, not perceiving him, ran forward with a similar object, and they came into violent collision, my patient receiving a blow from his fellow-cricketer's forehead on the upper jaw, immediately below the right malar bone. A distinguished general practitioner in the neighborhood was at once consulted, and he found, upon examination, that a fracture of the maxilla had occurred, driving inward the two right upper premolar teeth and first molar, with their containing alveoli.

"On the nineteenth of April, his professional attendant brought his patient to me for consultation, as some difficulties had occurred in the treatment of the case. The condition of the patient when I saw him was as follows: A fracture of the jaw had occurred immediately behind the canine tooth, apparently passing vertically up to about the summit of the fangs of the premolars, and then extending at right angles horizontally backward nearly, if not quite, to the posterior extremity of the bone. The anterior portion of the fractured bone was driven inward upon the roof of the mouth to the extent of about the third of an inch; while the second molar tooth, implanted in the posterior portion, remained unmoved, the broken bone being, as it were, a radius, of which the second molar tooth was the fixed axis. The projection of bone into the roof of the mouth led to a corresponding depression on the outer side of the jaw, and this was somewhat apparent also on the face. Very little swelling had occurred, nor was much pain felt, except on manipulation. There was, however, considerable inconvenience experienced from the fact that the displaced teeth no longer opposed their fellows in the lower jaw by a normal 'bite;' the cusps of the teeth, instead of interlocking with their inferior opponents, met them more or less on the points, and the mouth could not be satisfactorily closed.

"On endeavoring to force the displaced bone into its proper situation, considerable pain was produced; it could not be got thoroughly into position, and when the pressure was removed, the bone almost immediately resumed its former direction—projecting inward. During this manipulation distinct crepitus could be felt.

"To meet what appeared to me the requirements of this case, I adopted the following plan of treatment: I prepared a gold plate to fit the interior of the mouth, so as to hold the displaced portion of bone as much as possible in position, thus far acting in every sense as a splint, but with the additional advantage that it was capable of repeated alterations from time to time so as still farther to force outward the inward projecting bone and teeth, as the patient could bear the pressure. I first took an accurate model of the mouth, and upon this the plate or splint, whichever it may be called, was constructed, embracing two of the firm teeth on the left side, namely, the first molar and second bicuspid; then, passing over the palate behind the incisors and canines, it was made to bear on the right side against the displaced teeth and bone, extending still farther backward and surrounding by a wire the second molar tooth, which had not been displaced. The plate was so constructed that it exercised pressure only on the bone and teeth which were displaced, and in an amount in proportion to the displacement—most upon the front of the broken bone and the first bicuspid, less upon the second bicuspid, and still less upon the first molar.

"The accident occurred on the seventeenth of April; I first saw my patient on the nineteenth, and on the twenty-third the apparatus was applied. When the plate was first put on it was very tight, and produced considerable pressure on the inner side of the fractured bone, causing, however, a sense of tension rather than pain. In a few hours this feeling passed off, and when, four days after, I next saw my patient, I found the position of the parts very much improved. This improvement was followed up, and still more advanced by altering the plate—making it wider, and by adding portions of gold within the crescentic excavations that received the teeth. From this date, the twenty-seventh of April, my patient visited me about once a week, the plate having in that time ceased to produce any pressure, or exercise any influence requiring further alterations, till the second of June, when, as I find from my notes, the maxillary arch was completely restored to its proper shape.

"After this the plate was worn for many months—longer, I think, than was required—the patient getting used to it, liking it, and feeling it a comfort and support. I cannot, therefore, name the precise date when osseous union may be said to have taken place; but it has taken place, retaining the fractured bone in a proper position.

"I do not see what other method of treatment could have succeeded in this case. Probably, had no mechanical support been employed, the already-existing obliquity of the teeth would have been increased by the pressure of mastication, and certainly could not have been diminished; but by the means adopted, stability of the detached bone was secured, and its position gradually and progressively improved, till it assumed almost, if not quite, its original place.

"As it seems to me, important as this mode of treating a fracture of the *upper* jaw may occasionally become, the same principle as applied to the *lower* jaw is of still greater service. Any displacement that accompanies fracture of the superior maxilla is simply a passive condition: there are no muscles attached to the upper jaw which can derange or draw out of place the broken bone. With the lower jaw, however, the case is very different. The inferior maxilla is a floating bone, to which many powerful muscles are attached, and those connected with the rotating movement of the jaw—namely, the pterygoids—having a strong lateral antagonistic action. Destroy the integrity of the maxillary arch by fracture, and that antagonism ceases; the muscles on either side act independently, and draw the points to which they are attached more or less to the mesial line, and this it is which causes the overlapping of the fractured ends of the bone, often so obstinate, and necessarily with it the traction of the chin toward the side on which the fracture has occurred in the usual cases, where the lesion is in the horizontal ramus on one side. A plate or splint, and for the lower jaw I prefer an ivory one, carved to fit the interior of the arch of the particular jaw, with small crescentic excavations for the existing teeth, when placed in the mouth, restores the integrity of the arch for the time being. It may be worn without inconvenience long enough to allow osseous union of the fractured ends, preventing displacement the while.

"Not long since I was consulted by a professional friend in such a case as this. The fracture had occurred in the horizontal ramus, about the situation of the first molar tooth, and this too, as well as the second premolar, had long since been extracted, and the usual method of treatment—that of tying together teeth in the neighborhood of the fracture—could not be resorted to. The displacement of the jaw, and the consequent distortion of the face were extreme. The fracture had occurred on the right side; the left pterygoid muscles, being no longer resisted by the right, drew over the mass of the bone—the left horizontal ramus, chin, and anterior portion of right horizontal ramus—toward the right side, and to such an extent that the left lower canine tooth corresponded in position to the interval between the superior central incisors. My friend and myself agreed that the best and most promising plan would be to reconnect the broken and now separate portions of bone by an ivory arch or splint, within the jaw, adapted to its precise form, and attached to the remaining teeth. This plan was adopted with the happiest results, the ivory splint being worn till union had taken place, with scarcely any perceptible malposition of the jaw."—(*Lancet*, June 16.)

Hare-Lip.—"Mr. Guersant presented to his colleagues of the Surgical Society of Paris, a child forty-two days old, born with a very complicated double hare-lip. The division of the hard and soft palates was most complete; but in addition the division of the upper lip on each side extended above and comprised the cheek and lower eyelid, which was divided so as to expose the eyeball. The child, although brought up by hand, enjoyed pretty good health. Messrs. Gosselin, Désormeaux, Giraldès, Chassaignac, and Depaul were unanimously of opinion that, in presence of the perils which threatened vision, it was urgent to operate, at least on one side; later, added they, the opposite side might be attended to. Mr. Guersant did not participate in this opinion, and at the following meeting, on the minutes being read, the eminent surgeon, whose clinical lectures we have so often reproduced in this journal, seized the opportunity of expounding the ideas he professes relative to the proper period for the operation for hare-lip in infants.

"Whether the hare-lip be single or double, the operation may be performed after birth, but not during the first few days of life. It is not sufficient for the child to be born viable, but to insure success it must be vigorous—a circumstance which cannot be well ascertained for the first fortnight.

"Mr. Guersant operates therefore in the interval between the second and sixth week of life. For complicated hare-lip he still further postpones the operation. The latter is performed in several periods; it is laborious and not easily borne by little weak beings without reaction. It is consequently important to leave the child time to gain strength, an interval during which it may be vaccinated, another chance of failure being thus averted. Mr. Guersant has performed for eighteen or twenty years about twenty operations for hare-lip annually; and for reasons grounded on this imposing mass of facts, he has arrived at the conclusion that it is expedient to wait till the child has attained the age of twelve or fifteen months.

"The partisans of temporization, among whom are Messrs. Cloquet and

Velpeau, found adversaries in Messrs. Chassaignac, Giraldès, and Depaul. Mr. Chassaignac considers early operation so much the more desirable that children affected with hare-lip too often inspire a feeling of repulsion and do not receive the necessary care. According to Mr. Giraldès, it is better to operate early than to attempt the operation when teething predisposes the infant to convulsions. Mr. Depaul quoted several operations for complicated hare-lip successfully performed immediately after birth. In Germany, where this system is followed, Dieffenbach asserts that he had saved many children thus operated on.

"In reference to the special case the Society was called upon to examine, Messrs. Broca and Verneuil declared that, with the child presented by Mr. Guersant, the operation was so much the more urgent that the deformity of the eyelids rendered keratitis imminent, and likewise that this hare-lip presenting no prominence of the intermaxillary bone, it was easy to unite the parts without previous detachment and without having to apprehend that the child's tongue would destroy the cicatrix, as there was no interval between the bones. Mr. Désormeaux was to operate on the little patient."—(*Championniere's Journ. of Pract. Med. and Surg.*)

MISCELLANY.

In the course of a review of a prominent work on surgery in the *Louisville Med. Journ.* for May, Dr. Colescott, the editor, makes the following instructive observations on inflammation, which it will be seen are in accordance with the views upon that subject presented in this journal some time back: "It seems to us that it must be evident to any thinking mind acquainted with physiology in its present state, that in all this matter of inflammation there is something more than contractions and expansions of the capillaries, increase or retardation of the blood, accumulations of the corpuscular bodies of the blood, obstructions of the vessels, even if these be present; nay, rather that these are the mere visible anatomical expressions, as it were, of the inflammatory process, mere resultant not primordial conditions; and that we are to look rather to changes in the cell life itself in the affected tissue for the initiation of the inflammatory process, as well as for the governance of its issues. To this view all pathology is advancing with steady step.

"The study of pathological changes in cartilage develops the fact that in this tissue, which notoriously has no blood-vessels, all the tissue changes appropriate to inflammation begin in and are wrought by modifications of cell life development. The blood-vessels in the contiguous bone are crowded with blood, and the blood is stagnant in them as in the web of the frog's foot, but there is no contact; indeed, a broad belt of tissue intervenes between the vessels on the one hand and the cartilage corpuscles on the other. Yet the cells in the corpuscles increase in number and alter in form and character, the corpuscles increase in size as well as contents; in short, starting from this point, suppuration, softening, ulceration, necrosis, and tissue transformation all occur, and yet the blood-vessels stand without the portals, as it were, of all this, mere carriers of blood, obedient to the bidding of the powers within."

In a paper upon the subject, (*Georgia Med. and Surg. Encyclopedia*, June,) Dr. Hollifield thus notices some of the evil effects of tobacco upon the human system: "Tobacco affects the system by producing weakness, languidness, vomiting, vertigo, stupor, giddiness, paralysis, nervousness, and great debility, with often fatal prostration. It also acts upon the nervous and circulatory systems to an extent that is both terrifying and alarming, often causing death. When chewed or rubbed, it exerts a great influence upon the mucous membrane of the mouth, and also upon the salivary glands, the sublingual and the submaxillary, causing them to secrete a larger amount of saliva than nature intended them to do, or than is necessary for the purpose of accomplishing the duties assigned them; thus robbing the system of a portion of its fluids which are required for the healthy maintenance of its animal functions, merely for the gratification of a morbid appetite. The sense of taste is generally perverted or greatly impaired in all those who either rub or chew the noxious weed."

Dr. H. furthermore observes: "When tobacco is smoked it acts as an irritant, and frequently a portion of the smoke is carried into the lungs, rendering the air breathed hot and impure. It then acts as a sedative upon the circulation, and often irritates the lining membrane of the air cells in the lungs, which brings on inflammation, laying broad and deep the seeds of disease, which may in time hurry its victim to an early grave. Death has resulted from the inhalation of the smoke, and blindness has been occasioned by it in the case of Mr. L——d, of New Jersey, with whom the passion became so strong that it was impossible for him to rest satisfied unless he was smoking, and thirty-five segars a day were his usual allowance. In 1849 he first perceived that his eyesight was failing him. This alarmed him somewhat, and caused him to call upon a physician, who recommended the employment of spectacles, and advised his quitting the use of cigars. This he did for nearly a year; his eyesight improved rapidly, until it was as good as it had ever been. But a habit which had been fostered for years was not to be so easily eradicated. He again became a victim to its use, and consequently his eyes began to fail. He endeavored to quit the cigar; when he did so his eyes improved. But the habit was too strong; at last he gave way to it entirely, and in 1855 was almost totally blind, being only able to distinguish night from day; becoming, according to his own acknowledgment, at the early age of twenty-eight years, a victim to the immoderate use of tobacco."

The *New Orleans Med. and Surg. Jour.* for July contains an interesting article on the hygienic influence of travel by railroad, in which the author, DR. B. DOWLER, thus alludes to the beneficial effects upon the sight of looking at distant objects: "I will here mention a fact new to me, and not the less valuable because it happens to be personal. During a travel of less duration than three weeks, my habit of looking at objects comparatively distant, removed a short-sightedness which, though slight, had been of long duration—I have said distant as compared to books, manuscripts, etc. I have never used the glasses for near-sighted persons, except for distant vision; for these, however, after a few days' travel, I had no use, having been able to see perfectly as others at the usual distances. This long-sightedness I still retain, though slightly diminished by pen-work and proof-reading, which often extend far into the night."

In a paper upon the surgical and medical treatment of the wounded in the battle of Solferino, translated from the German by DR. STRUBE for the journal just mentioned, it is stated that "the *extensive destruction and crushing of the facial bones* mostly succeeded well, although in the beginning the prognosis seemed very unfavorable. One case of a Turco is mentioned, where the ball had entered the ophthalmic cavity, and had made its exit behind the processus mastoïdeus, and where, after a dangerous meningitis, life was saved. In another case the ball entered by the left 'ala nasis,' crushed the bones of the superior maxilla, went down to the angle of the right under jaw, and had imbedded a quantity of bony fragments in the muscles of the tongue; the ball itself remained here also, for, in the course of the suppuration which followed, the Turco one day spit the ball away. Cases of shot-wounds, where the ball had traversed the facial bones, fracturing and crushing them all, were healed, in single instances, in the short space of six weeks."

The following observations upon the relative effects of chloroform occur in a paper upon that subject (*Med. Jour. of North Carolina*, May) read by Dr. R. C. Hewitt before the College of *Phys.* and *Surg.* of Louisville: "In my observation, where *pure chloroform* is used, the great majority of persons become quietly insensible without the stage of excitement which sometimes precedes the sedative effects. I am satisfied that in most cases, if not all, in which such excitement appears, impure chloroform is used, or the patient, at the time of beginning the inhalations, is in a state of alarm and excitement, or is surrounded by disturbing influences of some kind.

"A lady of this city requested me to give her chloroform in order to have some teeth extracted, and made an appointment for a certain hour of the next day. When I met her at the time designated, I found, from her appearance and manner, she was much excited, and her pulse was greatly accelerated. In this condition she commenced inhaling chloroform, and after a few inspirations became violently excited, threw herself out of the dentist's chair, and all the influence of her husband could not induce her to continue the chloroform, or even to remain in the room. I was satisfied she had become excited by anticipating the dental operation so long before the appointed hour arrived, and I told the dentist and her husband that we would take her by surprise, on some day to be designated by them, and give her chloroform before she would have time to become excited. This expedient succeeded completely. She readily came under the sedative influence of chloroform without the least evidence of excitement. Hence, before commencing inhalation, the patient should be made as calm as possible by assurances of perfect safety, and all noises and other disturbing causes should be removed."

The *Med. News* for July gives, upon the authority of the *Mon. des Sci. Med.*, the following account of a case in which the bones and teeth of a fœtus became colored by madder taken with the food by the mother: "M. Flourens presented to the Academy of Sciences, June 4th, 1860, the bones of a fœtus colored by madder given to the mother with her food during the last forty-five days of gestation. Not only were the bones of the fœtus, but even the teeth were reddened; thus showing that the blood of the mother communicates so freely with that of the fœtus that the coloring principle of the madder is conveyed with the blood from the mother to the fœtus."

It is a question with naturalists whether certain animals perforate silicious or rocky substances by chemical or mechanical means. The following, from the *Pro. of the Acad. of Nat. Sci. of Phila.* for June, seems to establish the latter view: "Mr. Lea called the attention of the members to two very remarkable specimens of *echinus*, perforating rocks, which he had recently received from Mr. Cailliaud, of Nantes, the Egyptian traveler. He also exhibited a specimen of sandstone from Payta, in Peru, which contained *petricola*, *lithophagus*, etc. He reminded the members that he had presented to the Academy a very remarkable specimen, which he had received about two years since from Mr. Cailliaud, being a mass of *gneiss* which had been perforated by *pholades*. When Mr. Cailliaud, who had advocated, contrary to the opinion of most naturalists, the theory that some of the molluscs bored the rocks by friction, and not by decomposition, found that *gneiss* and *granite* and other *silicious rocks* were penetrated by them, he entirely settled that question, for there are no acids known which will decompose silex. Mr. Lea remarked that the two specimens now on the table were still more remarkable. The smaller one consisted of two specimens of *echinus lividus*, Lam., which had buried themselves in the solid *granite*, one of them having made a circular hole one and a half inches deep and two inches wide. This specimen came from the granite coast of the Loire-Inférieure. The second specimen consisted of quite a congress of individuals of the same species, imbedded in a solid mass of hard *silurian sandstone*, from the Bay of Douarnenez, in the Department of Finistère. In this beautiful specimen there are five individuals nestled in their circular holes, worked out in this hard stone by the attrition of their teeth, and there are three holes vacated. The specimen is five inches by six and a half, and there being eight holes in all, their circumferences nearly impinge on each other. Mr. Cailliaud is entirely satisfied that the boring is purely mechanical, that the five teeth are the instruments of exploitation, and that it is by the percussion of their points on the rocks that these holes are effected. The teeth are in form like the rodents, and constantly increase as worn at the outer extremity. He made a hole five millimetres deep and forty in circumference with a bundle of the teeth in an hour. One of the colonies which he examined was in a bay, and contained about two thousand holes, each one filled, and at low water they were but a short distance below the surface. Some of the specimens were not larger than a pea, and probably only five days old. The holes were not all made by the present occupants, most of them probably being very old and having successive inhabitants. Mr. Cailliaud mentioned in his letter to Mr. Lea that he shortly expected to receive from Guadaloupe an *oval echinus* which had made its *oval hole* in the mass of *madreporite*."

A writer in the *Lancet* relates the following case in illustration of some of the effects of syphilis: "While on the subject of syphilis, we may refer to an interesting case at St. George's Hospital, on the twenty-ninth of March, showing some of the results of that disease. An elderly woman was admitted under Mr. Tatum's care, with several old cicatrices about the face, from former syphilis. She could not open her mouth except to a slight extent, in consequence of the formation of several bands of tissue between the cheeks and gums, which were also the result of the healing of syphilitic sores within the mouth, and which so contracted during that process as to keep the jaw nearly closed. These were divided without chloroform, with the effect of completely releasing the jaw."

The importance of conservative surgery is strikingly exemplified by the unexpected success of an attempt to repair an injury from an accident in which the anterior half of the tongue was nearly bitten off. It is thus reported in the *Lancet:* "A case of somewhat unusual injury to the tongue was admitted into the Royal Free Hospital, on the third of March. The subject of it, a young man twenty years of age, was standing with his tongue out of his mouth near the end of a cart, when the vehicle, suddenly tilting, came in such violent contact with his chin as to cause the teeth to close upon the tongue, whereby the whole anterior half of it was nearly bitten off. When brought into the hospital, the bitten part was hanging, as it were, by a mere shred; and, hopeless as it seemed, an effort was made by Mr. Gant to save it. After arresting the hæmorrhage, which had been most profuse and very difficult to stop, three interrupted sutures were applied above and three below, the separated parts of the organ being adjusted as neatly as possible. Some little inflammation and swelling followed, as was anticipated; but when we were first shown the case on the fifth of March, union by the first intention seemed to be pretty general. Subsequently, a firm connection appeared to be established, and the man was discharged well; but there was not the same perfect sensation on the right as on the left side of the organ. It was on the latter that complete separation had not ensued at the time of the accident. This case is a practical illustration of how much may be done to save parts in very bad and apparently almost hopeless cases."

The value of conservative surgery is also shown by the successful substitution of stimulant applications for the knife in the curative treatment of cleft palate, as seen by the following from the same journal: "It may be recollected that M. Jules Cloquet published in 1855 an essay on a method of applying cauterization to the abnormal cleavage of certain organs, and that cases were therein mentioned in which union of the margins of the cleft had been obtained by repeated cauterizations. At the meeting of the Academy of Sciences of Paris of the twenty-first of May, M. Cloquet brought forward a case treated by Professor Benoit, of Montpellier. The child was eleven years old; the soft palate was completely cleft, and all the usual symptoms were present. The treatment lasted nineteen months, with two rather long interruptions. The whole cleft was now united, save that of the uvula, and the result was obtained by thirty-three cauterizations, fourteen with the acid nitrate of mercury, and nineteen with the solid nitrate of silver. A slight nasal pronunciation still exists, being the result of habit. M. Benoit means to apply the same treatment to the uvula."

In one of his lectures on experimental pathology, (*Med. Times and Gaz.*, June 23,) M. C. BERNARD thus speaks of the general functions of the glandular system: "The various glands disseminated throughout the system have, as you are well aware, been divided into two great classes: those which extract from the blood certain special principles, which communicate to each particular secretion its own individual properties; and those which, on the contrary, appear to secrete the blood itself, if I may be allowed to use the expression, or, in other words, to enrich the circulating fluid with the products elaborated within their own tissue. Such, at least, are the views which have justified several physiologists in placing by the side of ordinary glands, the spleen, the thymus, the supra-renal capsule, and other highly vascular organs not provided with an excretory duct. The lungs, in which the great process of oxygenation is accomplished, exhibit, in its full force, the powers attributed to this second order of glands; and the liver, which, if the biliary secretion is alone considered, belongs to the first class, is at the same time included in the second, on account of the grape-sugar which it produces. Now the influence of motor nerves on secretion is universally acknowledged; while the sensitive fibres are known to enjoy the property of setting in motion the opposite system; we are therefore naturally led to the conclusion that affections confined, at the outset, to one particular spot, may frequently poison the blood through a vitiated secretion of its fundamental elements, and thereby exert a deleterious influence over the whole system."

In the course of an article on disinfectants, (*Championniere's Jour. of Pract. Med. and Surg.*, March,) it is stated that "a physician of the hospitals, Mr. Hervieux, has devised a new mode of deriving advantage from solutions of chlorine, and this method is so very simple as to suggest strong hopes that it may be of service in some cases. We refer to *chloretted sponge.* Thus, a sponge impregnated with a solution of chlorine, applied directly to sores, or within sores, or in either purulent or gangrenous cavities, and reimpregnated several times a day, absorbs purulent matter as fast as it is formed, better than any other substance, and deodorizes perfectly. Unfortunately, chlorine impairs or destroys the sponge with rapidity and soon occasions too much irritation. This method, however, supplies us with an excellent means of cleansing anfractuous and gangrenous wounds, but coal-tar and plaster will nevertheless remain preferable in the majority of cases."

In relation to the resection of the jaw in phosphor-necrosis the *Med. and Surg. Reporter* says that "in a valuable work upon the diseases of the teeth, by Dr. Albrecht, of Berlin, the early removal of the diseased bone is deprecated. Unless the onward progress of the disease has been permanently arrested, operative procedure will but facilitate the destruction of the bone, inasmuch as the wound affords an exposed surface to the action of the poisonous element with which the saliva is impregnated. Resection should only be performed when it is certainly ascertained that the patient is no longer under the influence of the phosphorus; it is advisable to suffer nature to effect the removal of the sequestrum, in all cases in which the patient's health is not threatened by the suppuration incidental to the elimination."

Among other objections to hypnotism in a paper on its uncertainty and little scientific value, translated by Dr. Steiner for the *Am. Med. Monthly*, (July,) it is said to be applicable "to only a small number of individuals, and even in those the anæsthetic stage of hypnotism is not always attained; and, what is of still greater importance, according to Azam, it is liable to bring on attacks in cases of epileptic or hysterical persons."

According to the *Am. Jour. of Sci. and Arts*, "the fusion and casting of platinum on a considerable scale has been accomplished by Messrs. Deville and Debray. At the sitting of the *Académie des Sciences* at Paris, June 4, they exhibited (1) Two ingots of platinum weighing together 25 kilograms, fused in the same fire and cast in an ingot mould of cast-iron. The surface of the metal shows evidence of perfect fluidity and carries the impression of characters engraved on the surface of the mould. (2) A toothed wheel of platinum, cast in ordinary founders' sand, was also shown. This was cast in the mode common for cast-iron, in a two-part flask with a sprue and vent holes as usual.

"The metal used they obtained by the dry mode from the crude platinum and platinum-money which the Russian government had placed at their disposal; the details of the process being reserved for a second communication to the academy."

The *Am. Druggists' Circ.* gives the following formula for a silvering powder:—

“Take of	Chloride of silver	1 part.
	Pearl ash	3 parts.
	Common salt	$1\frac{1}{2}$ parts.
	Whiting	1 part. Mix.

“Rub well on the clean surface to be coated, brass or copper, using a piece of soft leather or a cork moistened and dipped into the powder. This powder may be made into a wash by mixing with water and shaking it up when it is to be used.”

It is stated *(ibid.)* that “Ruhmkorff has observed that when one of the poles of a steel magnet is clamped within a soft iron stirrup, the latter becomes much harder and more difficult to file. By removing the magnet the iron recovers its original softness.” This may prove of practical importance in giving a factitious temper to files and other instruments.

In an article on the preparation of liquid glue, it is said *(ibid.)* that Demoulin was led to try the effect of dilute nitric acid on glue, which gave the desired solution of that substance. “His method of preparation was as follows: The best Cologne glue is dissolved at a gentle heat in an equal weight of water contained in an enameled or glazed vessel, and when the solution is complete, nitric acid of 36° Beaumé is added in proportions, and at intervals, to the amount of one-fifth of the weight of the glue employed. Nitrous vapors are abundantly given off, and a glue is obtained that is perfectly fluid, and may be kept in open vessels for years without alteration. Already, in 1852, this preparation was sold in Paris as inalterable liquid glue (*colle liquide et inalterable.*) A better liquid glue than that just described is made with acetic acid. One pound of good glue is dissolved with heat in a mixture composed of one pound of strong vinegar, one-quarter of a pound of alcohol, and a very little alum. According to Cavallius, however, alum destroys the tenacity of glue, and should be avoided. In order to make the glue white in color, a quantity of sulphate of lead is added to the solution. The liquid glues now so extensively sold in this country are made with acetic acid, and those we have tested are very excellent preparations. A glue that is liquid at low temperatures is not so adhesive as one which requires gentle warming to make it flow. Solutions of chlorid of barium, bichromate of potash, and some other salts, as well as all the various mineral and vegetable acids, also have the property of holding glue in permanent solution.”

The *Sci. American* states that “a mechanic in Islington, England, has recently made a burning-glass three feet in diameter, by which steel, flint, and even platina, it is said, have been melted by concentrating the rays of the sun upon them.”

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American Medical Times. Edited by Stephen Smith, M.D., Elisha Harris, M.D., and George F. Shrady, M.D. This is a new, handsome, and promising weekly, corresponding in size and plan to its valuable transatlantic namesake. It is a continuation of the *N. Y. Jour. of Medicine* and the *N. Y. Med. Press.* Its typography, general appearance, and contents are excellent, and it deserves, and will doubtless secure, an extensive circulation. It is published by Baillière Brothers, 440 Broadway, New York, at $3 per annum.

THE

DENTAL COSMOS.

NEW SERIES.

Vol. II. PHILADELPHIA, SEPTEMBER, 1860. No. 2.

ORIGINAL COMMUNICATIONS.

PRACTICAL HINTS.

BY J. D. WHITE.

We did not expect so soon to allude to irregularities of the teeth—as there are many other subjects which we have been anxious to refer to—but when daily experience shows that the most censurable, and we may say wicked, practices are still pursued by those from whom better things are to be expected, it becomes necessary that some one should keep the subject before the profession and the community. We refer to the *premature extraction of deciduous teeth for apparent irregularities.*

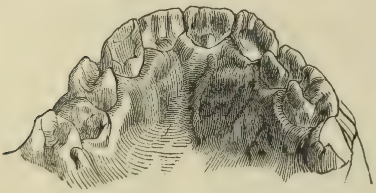
It can easily be understood that, in the early history of dentistry, errors crept into practice, as well as into works on our art, and especially in relation to the eruption of the teeth and the changes the jaws undergo at that time, as doubtless the *outward signs,* and those immediately presenting themselves, only were taken as guides to the practitioner in relation to the treatment of deciduous teeth, instead of considering the relation the two sets of teeth have to each other during their growth and eruption. As soon as a deciduous tooth of a child becomes a little loose, the parent rushes to the dentist to get it extracted, with as much anxiety as though the life of the little patient depended upon it; and when we decline, as is usual, it is astonishing to witness the surprise and apparent disappointment on the countenance, since there is no opinion that can possess a parent that they hold on to with so much tenacity.

We have given our views elsewhere why we do not extract deciduous teeth, except under extraordinary circumstances; but the object of the present article is to protest against a practice which we hoped had died out, especially among those who have been appointed to teach the science of our art. We allude especially to the *premature extraction of the deciduous canine teeth, to give the permanent lateral incisors room.*

We never knew a case where such operation was necessary, nor do we believe it ever exists. The absorption of the deciduous canine root has seldom commenced at the period of eruption of the permanent lateral incisors, the difference between their periods of eruption being from three to four years. When a deciduous tooth is extracted the part ceases to grow, with the disadvantage, we believe, also, of *atrophy* of the part, as a consequence. But, apart from the contraction which takes place and causes the permanent laterals to approach the anterior deciduous molars, they fall backward in the arch, so that when they have grown long enough to meet the lower teeth, they are inside of them.

In a skull which we have now before us, of about seven years of age, the lateral incisors are in the act of erupting, and the canines are lying in front and upon their roots. Now, if the deciduous canines were extracted, the arch would be broken at that point, and the canines would descend in the position they now occupy, because the crown of the first bicuspids are in contact with the posterior parts of the crowns of the canines. When the deciduous canines are extracted, the permanent canines, laterals, and first bicuspids retain the position when erupted that they occupied in the jaw at the time of the premature extraction of the deciduous canines. Besides the disadvantages of the arrest of growth, they have lost their gubernacula.

We give a cut here which illustrates fully the mischief attending the habit of extracting the canine teeth on the approach of the permanent laterals. Age of the patient, ten years.



It will be observed that the laterals are hard against the first bicuspids; the canines are nearly ready to erupt, and are directly over the laterals, helping to depress them and cause them to fall back of the lower teeth when the mouth is closed. In this case the inferior lateral incisor, left side, grasps the lateral and front incisors of the upper jaw, and the right deciduous canine grasps the right superior lateral.

This is a malarticulation of the teeth, caused wholly by the extraction of the superior deciduous canines. This patient, like many others, is injured for life, or incurs the liability to undergo protracted treatment, to restore the parts to what they would have been if let alone.

What business has a dentist to interfere with the half-completed evolutions of nature in her most beautiful and complicated developments? We can excuse bad work, when one is called upon to do the best he can when his services are required, but we have no patience with intermeddling. There can be but two causes given in explanation—the one is a want of *moral responsibility*, and the other *ignorance*.

(To be continued.)

THE CLAIMS OF DENTISTRY UPON DENTISTS.

BY J. FOSTER FLAGG, D.D.S.

[Read before the American Dental Association, Washington, D. C., Aug. 1860.]

In this country, during the past few years, and within the recollection probably of every member of this Association, earnest efforts have been made for the elevation of dentistry, as a science, by those whose attainments were of that character which enabled them to fully realize the importance of that branch of medicine which they practiced, and the consequent value which should be accorded it, as promoting in no slight degree the enjoyment of personal comfort and health, while bestowing its acknowledged benefits in the direction of personal appearance.

That these labors have been fruitful is apparent to all practitioners, in the enviable position accorded to American dentistry by the whole civilized world; but, I believe that, to the minds of those who have labored most fervently and with the highest aspirations, an assurance of even more worth and more solidity is now afforded, in the present gathering together of a body of dentists having the customary requisite for the establishment of authority, in the fact that they are regularly *delegated* to represent the combined interests of the local associations throughout our land.

This act has, at length, afforded a tangible foundation for the erection of a superstructure which shall prove the truth or the fallacy of the claim of our specialty to that high position which has been demanded for it, in the assertion of its worthiness to be regarded as a legitimate scion of that boon to humanity, the Practice of general Medicine.

This act may well be regarded with pride, as the consummation of the exertions of our predecessors. It now rests with us to fitly prosecute a work so nobly begun, and it has seemed to me that it would be well for us were we at this time to devote a few moments to the presentation and thoughtful consideration of what the *proper* (I use the word in its highest acceptation) prosecution of our calling, for which we have claimed so much, demands in return from us.

It claims from its practitioners a degree of combined moral, physical, and general intellectual attainment, equal to, if not greater, than that of any other calling.

I present the position in this plain manner, knowing that at first it will seem arrogant and untenable; but I think that careful scrutiny will show alike its apparent arrogance to be but due appreciation, and the propriety, at least, of the actions and qualifications of its legitimate practitioners being such as to warrant the assertion.

Called to associate in very intimate professional relationship with the old and the young of both sexes, with the wealthy and the comparatively poor, with the educated and the ignorant, with the amiable and the irritable, with the relying and the self-reliant, it requires a knowledge of human nature, by no means superficial, to enable the dentist so to comport himself as to render his intercourse *acceptable* to all, maintaining at the same time his relative social position and his professional superiority; and this is the more true in that the dental services involve infliction of bodily suffering, as well as alleviation from pain, and that patients are generally in full possession of their appreciative faculties.

Again, many require to be amused, others interested, not merely children, but those of larger growth; and to do this successfully, implies not only remarkable adaptiveness, but a fund of resource and information such as few are able to draw upon. How often may the seed be sown, in the familiar conversation of the office, that shall stimulate to such investigation and application, in various directions, as shall be of incalculable advantage to those upon whose brain the seed has fallen. How often may the germs of fortitude, decision, truthfulness, or thoughtfulness, be so securely ingrafted as to play a most important part in the development of individual character, shedding their benign influence not only over the inner life of their possessors, but around upon all those with whom they may associate! And this, also, is the more true in that as humanity is constituted, deception, vacillation, and thoughtlessness is the rule instead of the exception. What is the moral influence upon a child who is enticed to the dental office under the pretense of accompanying a parent in the fulfillment of an appointment, and, when there, is induced to submit to an examination, and has a tooth extracted upon the assurance that it is only to be "*looked at?*" Is not the name of "dentist" synonymous with all that is bad and to be feared? The parental conduct is almost universally overlooked, and the operator, as the deceiver and inflictor of pain, is the object of resentment and detestation. How different has been that influence which results in both young and old placing implicit confidence in whatever their dentist tells them, feeling that what he says must be so, *because he says it!*

Dentistry presents peculiar claims upon its practitioners in a physical point of view. The advantages of personal appearance, of intelligent physiognomy, and gentlemanly bearing, are too palpable in the prosecution of any professional avocation to require more than the most casual notice. In this, our own calling partakes to a certain extent; but there are *more points* dependent upon physical conformation which tend perfectly to adapt the dentist to dentistry than are absolutely requisite in any other profession. The perfect vision; the steady nerve; the delicate manipulative skill; rapidity of action; muscular strength; and, above all, the possession, in a high degree, of that most rare *combination* of brain, capability and manual dexterity,—all find ample field for the exercise and establishment of their superiority in the duties which devolve upon us. We see daily the advantage which would accrue to us from ambidexterity, and time and again regret that we have not one arm and hand *more* than is usual with mankind.

In its moral claims, dentistry is unsparingly profuse—and I here assert that no man *can* be a good dentist unless he has a clear appreciation of these claims, together with the desire *and ability* to act in accordance with them—appreciation and desire are insufficient; appreciation and ability, I am sorry to say, are oftentimes insufficient; a combination of appreciation, desire, and ability can alone produce a perfect result. The possession of these qualities must certainly argue a great degree of individual excellence in any avocation; but where much has to be left to the honor of the operator, much more responsibility of character should be demanded by the community. Work in dentistry has to be done thoroughly, in positions where, if done well, the dentist knows no other eye than his will ever rest upon it; his own consciousness of well doing, and his own satisfaction at success, are too frequently his only reward. *It is easy to ascribe a dozen reasons for any failure, all of which may be acceptable to patients, because they cannot refute them; but success is almost always regarded by them as a mere matter of course.* It may be creditable to our profession that this is so; but it certainly detracts materially from the reward of honest endeavor.

Again, in the ordinary prosecution of clerical, legal, or medical duties, an opinion as to ability can be formed, based upon reliable data, in a comparatively short space of time. Sermons and manners are liked or disliked, cases are lost or gained, diseases are conquerors or conquered, and the results show themselves promptly; but almost all of our operations can be sent forth worthless, and even the simplest require at least a year or more to prove them so. That the knowledge of this is a powerful incentive to make "reputation" the cloak for much deception, is, alas! too glaring to pass unnoticed; and it should be ours, for each to add his mite toward wiping out so gross a blot upon our escutcheon. The fact that the easiest operations are the most compensating, tempts many an unworthy man to the manufacture of cavities, for the mere purpose of the introduction of plugs! This process of drilling is generally preceded by a dissertation on the extreme hardness of enamel, and the impossibility of making any impression upon it with the finest instruments, unless caries has marked it for its victim! The utter falsity of this position should be constantly impressed upon patients, that being forewarned they may be forearmed, and made to understand the immediate pecuniary necessity for a proper choice in their dental selection. They should be shown, whenever occasions offer during the performance of operations, the great facility, on the contrary, with which large openings may be pierced, even to the pulp cavity, through solid tooth substance, and thus be *made to see* with how little labor they may be deceived and defrauded.

The dentist should be governed by the highest moral influences in his intercourse with patients. Around the clergyman is thrown the sustaining aid of religion, of position, of association; all tending to make him wary in his walk of life, taking heed lest he fall, and knowing well the universal opprobrium which would visit any deviation from what is regarded as his proper path. Around the physician is thrown the barrier of the patient's home; the universal presence of members of their families; the existence of constitutional disease and its general concomitants, of weakness, suffering, and distaste of other than absolutely professional intercourse; while the dentist has not only to combat the almost total absence of all these, but the absolute presence of every facility for yielding to temptation, and for inducing others to do so. This state of things *must* continue from the nature of our operations. Our patients *must* come to our offices; they *must* come frequently; they *must* come at the hours which suit our convenience and the exigencies of the case; they *must*, from the length of duration of visits, frequently come alone, or seriously inconvenience friends or relatives; and, therefore, it becomes necessary that every confidence may be placed in the proper influence of association with the practitioner. This subject also should be looked full in the face; it should have its fair presentation before the community, and he who passes this ordeal unscathed, *should* reap a rich reward. I would that time permitted the introduction of many other points in regard to dentistry's claims upon its followers, such as attention to cleanliness, methodicity, diligence, the abnegation of all disagreeable habits, attention to business, etc. etc.; but, hoping that enough has been said to establish for its proper prosecution a standard of mental, physical, and moral quality, far above what is usually accorded it, I lay the matter before you, earnestly soliciting a united, continued, and hearty effort to place our art upon an eminence in this direction equal to that which it has at length obtained in the ascent of the rugged hill of science.

EXTRACTION OF TEETH.

BY C. P. FITCH.

[Read before the American Dental Association, Washington, D. C., Aug. 1860.]

The remarks which I submit for your consideration are a few general thoughts on the extraction of teeth. That great improvement has marked this branch of dental surgery, since the revival of the forceps as an instrument for extraction by Mr. Cartwright, an eminent dentist of London, about the year 1830, and which has now so fully taken the place of the key of Garengeot, none, perhaps, will feel disposed to question; yet this operation is of such frequent occurrence that it is very apt to be ranked among the minor duties of dental practice, and considered of such little consequence as to demand but a slight expenditure of physical energy and very little culture or skill to accomplish all desired results.

The estimate thus placed upon it has given occasion for the enlistment of those in its practice who are poorly qualified to meet its demands and responsibilities, and, in some instances, their professional conduct has been subjected to just censure and public condemnation.

In discussing this subject, I wish to confine my remarks to the consideration of the following particulars:—

1st. The instruments of extraction.

2d. When and how this act is to be performed upon the different teeth.

3d. A few suggestions touching the general bearing and deportment of an operator in his office.

I do not propose to give a history of either tooth-drawing or a description of the various extracting instruments used at different periods; neither to notice the person by whom introduced, nor point out the time of their introduction into dental practice; but to direct my remarks, more particularly, to the consideration of the kind and form of instrument which the nature of things demand.

Instruments for extracting teeth should be so constructed as to meet, in their adaptation, the form and shape of the teeth, the application of force in the most feasible and direct manner, and the necessities of the case, in allowing that direction to be given to the force which meets with the least resistance, without endangering the mouth of the patient.

Of the instruments used at the present, the forceps and various styles of elevator (or *lingue de carp*) are the most appropriate; far superior to the key in many particulars. The force exerted in the use of the key is much greater than is actually required, from the fact that it is applied at right angles, or nearly so, with the tooth and jaw, and this direction is always lateral, whatever be the peculiar conformation or position of the tooth, or the thickness and strength of the surrounding alveolus. As there is great variety in the conformation of both crown and neck in the different classes of teeth, and many times in the same classes, describing the segments of a circle various in size, it is very evident that the jaws of the forceps should be so formed in the curvature of their beaks as to meet this variety. To illustrate my position. The cervical anterior surface of the superior central incisors is larger than the posterior surface; the anterior jaw of the forceps should be constructed to meet this peculiarity; and, when thus formed, this accurate adaptation should prevent their being used for the extraction of any other class of teeth; indeed, there should be different sizes of forceps for these teeth, from the fact that they differ very much in their circular dimensions.

Again, of the two exterior roots of the superior molars, the cervical portion of the mesial root is the larger and more prominent; hence the two grooves of the external nibs of the forceps should meet this peculiar conformation. So with the instruments intended for the other classes of teeth; they should be accurately adjusted, embracing as much of the circle at the cervical portion of the tooth as possible. Failures, either in breaking the tooth or instrument, are many times more attributable to a want of this nice adjustment than to all other circumstances combined; for it is evident, that whenever the groove or grooves in the jaw of an instrument are either too large or small, the instrument must touch and press the tooth at one or two points only, and this unequal pressure is very liable to crush the tooth or snap the nibs of the instrument.

Again, the jaws of the instrument should be constructed so that they will neither strike the tooth too abruptly, rendering it liable to be cut off, nor too obliquely crushing the crown of the tooth before striking its neck. By following out this plan in the construction of instruments, six or eight pairs of forceps will be required for the superior teeth, and nearly the same number for the inferior set, and quite a number of smaller sizes and the various styles of elevators for root extractors. A minute description of these instruments is uncalled for. Forceps are now constructed on these principles, or at least so attempted; but to say that there is no room for improvement, would be undoubtedly a misstatement. Eminent operators have their favorite forms and styles: but these general ideas should never be violated in their manufacture; and, whenever disregarded, must increase the probabilities of a failure in the operation.

With these general remarks upon instruments, I pass to notice the questions: When and how this act is to be performed upon the different teeth.

That many teeth are extracted, even at the present time, that should not be, is a fact too patent to be denied. Although the profession has rapidly advanced within the last decade of years, yet, in certain sections, there exists still a crying necessity for reform. Teeth that a few years since were extracted by the wholesale, are now readily restored to health, and rendered valuable as masticators, or preserved as ornaments to personal beauty.

Viewing the subject from this stand-point, made luminous by the testimony and experience of hundreds of eminent dentists of this and other countries, we insist that no tooth should be extracted until remedial agencies have been exhausted in vain for its preservation, or decomposition advanced so far as to render its restoration impossible. Thorough, persevering treatment and fang filling have done much in dental achievements; and let "*excelsior*" still be the motto in preserving, rather than in extracting teeth.

Some dentists gain quite an enviable notoriety as expert tooth-pullers. This quality, in itself, is very desirable, and highly commendable; but not so when brought into requisition by an indiscriminate slaughter of all aching teeth, and laying them dripping with gore at this unhallowed shrine of their ambition—and, instead of good Samaritans, binding up and mollifying, (not with extract,) they are metamorphosed into walking, breathing machines of torture; rioting in bone, flesh, and blood, and moved by an energy and zeal which, if properly directed, would be worthy of imitation. A catalogue of the good qualities of this class of operators is frequently met with in the public prints of the day. They no doubt believe in the maxim, that blessed is he who can blow his own horn, for whosoever bloweth not his own horn the same shall not be blowed!

As a general thing, we would recommend the removal of the *Dens Sapientia* after an exposure of the nerve. Neither should that be considered sound practice which leaves offensive, broken teeth, or infectious roots in the mouth, requiring nature to do, in her slow processes, for the patient what the dentist is either incompetent to perform or does not feel disposed to undertake.

We would urge the immediate removal of all ulcerated teeth or those threatened with abscess, when there is no hope or desire of making them serviceable again. Relief is thus much sooner afforded than by prophylactic treatment.

When extraction becomes necessary, there are a few points which it would be well always to consider: the age, mental and physical constitution, the health of the patient, as well as the physiological and pathological conditions of the tooth and its surroundings.

Though unpleasant be the task of extraction, an operator should never for one moment question his duty, so far as success or the reverse may attend his endeavor. An honest, skillful effort, though unsuccessful, will neither involve him in serious difficulty nor compromise professional standing. But, admit that he does suffer unjustly, and his hard-earned reputation is stricken in the dust: should this be a sufficient cause for any swerving from an honest discharge of duty? Is not all this assumed in the assumption of dental practice? Surely, he who takes the opposite course is not entitled to the respect of the community, and must, sooner or later, experience its withdrawal, if not suffer in the loss of self-respect.

How this act is to be performed upon the different teeth involves a consideration of the following particulars:—The anatomy of the teeth and jaws; the force requisite; its application and direction. I do not propose a lengthy discussion of these points, but to do little more than to call attention to the fact, that a knowledge of them is highly important to the successful practice of dental surgery.

The same class of teeth are not extracted with the same force from different mouths; neither are the different teeth removed by the same force from the same mouth. The difficulties or intricacies attending extraction are greatly enhanced by exostosis, the direction and shape of the roots, the strength and firmness of the maxilla, and the stage of the tooth's decomposition.

Mr. Tomes divides the act of extraction by the forceps into three stages: the seizure of the tooth, the destruction of the membranous connections with the socket, and its removal from the socket—and urges that each act be thoroughly executed before proceeding to its successor.

A few words in reference to the seizure of the tooth. It is quite important that the forceps be carried to the alveolus before an attempt is made to extract. Too much emphasis cannot be placed upon this requirement. Some operators are very careless in this respect. They seize the tooth at a point between the neck and crown, instead of pushing it to the bony structure surrounding the tooth. Some one, when imparting instruction upon this subject, has said: Push the jaws of your forceps into the sockets as though you intended they should come out at the top of the head or under the chin.

The kind of force necessary to sever the membranous connection between the root and socket may be either rotary or lateral, etc., depending upon the class, shape, and position of the tooth. The inferior wisdom teeth are, at times, the most difficult teeth to extract. The force, as a general thing, should be upward and backward, forcing them toward the ramus of the jaw. This is easily accomplished, whenever the inferior second molar is in its place firm and healthy, by the use of the wisdom forceps or elevator. But, whenever this tooth stands alone, and is either malplaced or shaped, or is much advanced in decomposition, with fangs curved backward on a line with the maxilla, the requisite force to extract properly is not so easily applied, and the ingenuity and patience of the operator is taxed severely. No definite rules can be laid down in such cases; circumstances must always suggest the means and govern the operation.

The inferior molars are frequently exceedingly difficult to remove. At times their fangs require to be separated, to prevent serious injury to the jaw. To illustrate:—A robust German, aged forty, bilious nervo-sanguineous temperament, presented himself for the extraction of an inferior right second molar. He remarked that three dentists had been unsuccessful that morning, after repeated trials, to remove it. On diagnosing the case, I found the tooth broken on a line with the alveolus, which was broad and heavy. The portion remaining in the jaw was sound and firmly planted. The teeth were large, of a very dense and flinty texture; had never had but one extracted, and the process was long and painful. After removing a portion of the alveolus, exposing about two lines of the tooth, with appropriate forceps an attempt was made to extract, but the effort was a failure. The portion of the tooth seized came off as perfectly as if it had been removed with a chisel. The roots were yet firm and remaining together. They were now separated, and readily extracted, with very little pain to the patient. On examination, they were found large, and very much converged, having a strong hold of the jaw, which rendered it impossible to have removed the tooth whole, without serious injury to the maxilla.

I will not pursue this part of the subject further, as the almost endless variety of conformation and condition of teeth forbids.

A statement of definite rules governing the deportment of an operator in every instance would be exceedingly difficult, and nothing more than generalities can be indulged in, leaving good sense to meet the individual demand.

A person entering a dental office to have an aching tooth removed expects, and indeed is entitled to, a kind and appreciative reception. The first impression upon the patient is frequently the most potent in giving quality and character to the operation itself. The simple act of approaching the patient is often attended, either with an utter want of kind and gentlemanly behavior, or with an apparent abruptness, which must fasten upon the mind of the subject the impression of severity, indifference, or incompetency, either one of which is greatly to be deprecated, and will most assuredly have its legitimate influence in repulsing, if not entirely defeating, the operation.

It is quite important and desirable, in order to inspire confidence and secure ready submission, to impress the patient with the following characteristics: Integrity, skill, and a tender regard for physical and mental suffering.

Integrity is a fundamental quality in moral character, and is essential to great and enduring success in any employment of life. It imparts force, beauty, and symmetry to the character, and crowns the summary of superior gifts and excellent qualities; while dishonesty and deception defeat their own ends, and detract fully one-half from an otherwise skillful performance.

A promise of more than is warrantable, on the one hand, should never be made, and on the other, a brief statement of all the favorable circumstances which the case presents should never be withheld, whenever a desire is expressed to know them.

The least departure from truthfulness, either in statement or action, especially with a child, is unpardonable in an operator under any circumstances; very unhappy influences are left upon the mind connected with this operation, which a long life cannot entirely dissipate. This period is one of implicit confidence, and childhood's trust and reliance should never be shaken or betrayed.

Excessive solicitude or urging on the part of the dentist is, oftentimes, excessive folly, defeating the very ends desired; both insulting to the common sense of the patient and a departure from that natural dignity which is ever the mark of the highest style of man, and which should, especially, characterize the professional man.

The general excitement and dread attending this operation is often very great, especially where the subject is young, or a person feeble in health, with a nervo-sanguineous temperament; so much is this the case, that it is frequently deferred for months, and even years, until an agony of suffering forces submission. All such instances call for the exercise of great patience, candor, and gentleness, yet force and decision.

Promptness, self-possession, and determination, or, in one word, executiveness, coupled with ingenuousness and intelligence, will always establish in the mind of the patient the claim of skill and ability, without the blow of trumpets or the clash of arms. But, where these qualities are wanting, neither assumed nor conceded professional reputation, or vaunted scholastic advantages and endowments, will either supply their place or efface the idea of rudeness, inefficiency, and arrogance. Real merit and quality should be the basis of professional character—for the universal law of equilibrium must eventually determine the standing of every man.

When approaching this operation there should never be a great flourish of instruments, by a studied arrangement of them before the eye of the patient, as though an expectation was entertained that their use might be necessary before success should crown the effort; neither should this inauspicious moment be the occasion for sharpening the lancet, and in sundry ways to test the keenness of its edge. These, and many other things which might be enumerated, though thoughtlessly performed, and in themselves trifles, depend upon it, have their influence, and will detract very much from the aggregate of those manly qualities which constitute the true gentleman, the ripe scholar, and the finished and expert operator.

Thanking you, gentlemen, for your kind indulgence, I close with this sentiment:—

The Dental Surgeon—May his ingeniousness, erudition, skill, and integrity ever be commensurate with the demands which the age has upon his profession.

THE DEMANDS OF THE AGE UPON DENTAL SCIENCE.

BY GEO. T. BARKER, D.D.S.

[Read before the American Dental Association, Washington, D. C., Aug. 1860.]

It may be well at this time to stop for a moment and consider what are now the true demands upon the dental profession, and inquire whether those demands are being met by hearty and earnest colaborers, in a profession that has the high and praiseworthy aim of alleviating human suffering, and whose office is the restoration of health and happiness to suffering humanity. It may be well for us to glance at the great advancement in dental science during the past fifty years, and our hearts must be filled with honest pride that our noble art has won so honorable a position; but let us consider how this has been accomplished. To me it seems as if a comparatively few men have lifted our science to its elevated position, while the majority have looked on, enjoying the fruit of these labors without the slightest return; and, indeed, too often depriving them of honestly won laurels.

But to continue, let me ask what are *now* the *demands* upon our profession from our *patients?* and how far are they *met?* It is in vain that we may claim that our science has reached an approximation to perfection; for we must grant that the demands of the age are for far less painless operations than we can now perform. Do we not at this very time need some agent that will destroy the dental pulp without the intense pain that too often has to be suffered by the afflicted patient, an agent that can be used with impunity in the deciduous teeth of children, without danger to those teeth that are present in the mouth, and those delicate ones that are being developed in the alveolar arches? This, I would contend, is a demand of the age; and who shall supply it? Who shall present to the notice of the profession an agent that shall accomplish these results, lessening also the ratio of failures, which are now attendant upon our practice?

There is another demand which, to me, seems quite as important as the preceding one, and that is for a different treatment in cases of *sensitive dentine.* It may do for some to assert that from this pathological condition (for I claim it is a pathological condition) they have no trouble, their patients being relieved by a few direct cuts from a sharp excavator; but personal experience and observation teach me to the contrary. There is, therefore, a demand from our patients upon us for an improved method of treatment; some agent that will act as a palliative, while it will not affect unfavorably the sensitive pulp, or destroy the surrounding tooth substance; an agent that will give our patients a confidence to come to us in the earliest stages of carious action, and not wait, as is too often, and I might almost say universally the case, until complete exposure of the dental pulp has occurred. The great dread which our patients now too often feel for our art would then be removed, and a visit to the dental practitioner would not as now be associated with visions of hours of suffering and pain. I claim that there is nothing which so much discourages a universal resort to the benefits of our science as this one drawback. Then is not this a true demand of the age, and one that, if possible, should be supplied? I feel that it is, and that the attention of every hearty laborer in the field of dental science should be directed toward it.

The age also demands from the dental profession a *high order of* *operation* upon the teeth—work that shall be finished and permanent, protecting as much as possible the teeth from subsequent decay. Is this demand met? Unfortunately, we cannot answer in the affirmative; for while there is a goodly number, though in the minority, whose standard of work is high and praiseworthy, who meet the demand of the age in this direction with truth and honesty of purpose, there are too many who do not keep up to this standard, but graduate their work by the price paid, the number of operations to be accomplished in a given time, or, relying too often upon the reparative process of nature to protect an exposed pulp by an ossific deposit, dismiss the patient, the tooth being frequently lost by such treatment. I repeat this in no invidious spirit, but with the sincere desire that the true demands of the age upon dental science may be met.

Again, there is a demand upon the profession for a higher order of acquaintance with different *pathological conditions*, and particularly in correct *diagnosis*. This must be apparent to every one present, for who has not seen "*nerve paste*" applied in a tooth where a pulp had not been present for years, or has not known of numberless pulps destroyed unnecessarily, and teeth needlessly extracted without number? I ask, who has not seen this? And therefore I answer, the true demand is not at present met. It is true, there are many who, as in operating, consider what is due to their patients, their profession, and themselves; and, acting accordingly, found their diagnosis and prognosis upon truly scientific principles, and are unwilling to blindly work or trust to the ignorance and credulity of their patients.

The age demands educated practitioners both in *literature* and *science*, with minds that can make the fingers work out the thoughts of the brain; not merely a scientific knowledge or a dexterous workmanship, however important both may be, but educated labor is the demand. And is this met? Unfortunately, we must answer again in the negative. A late dental magazine states "that the yearly addition to the profession does not fall far short of five hundred persons; of this number a little over *one-tenth only* are graduates of dental colleges." How, I would ask, can this educated labor be obtained, if not in dental colleges? Can it be acquired from a private preceptor? I contend it cannot, however conscientiously that duty may be performed; and for these reasons, that the private preceptor cannot make each department of dental science a particular and constant study. If delicate manipulation is his pride, perfection in mechanical work must necessarily receive a limited attention. Again, he has not the facilities for imparting that knowledge of Anatomy, Chemistry, Physiology, and Pathology, an acquaintance with which is as much needed by a dental practitioner for the basis of a sound practice, as it is important for him to possess sufficient strength to extract a tooth. This, therefore, is a demand, and a just one too, of the age, that should be met, one that as dentists, proud of our profession, we should uphold, and insist that *every young man* who now enters the profession should do so through the portals of our dental colleges, assisted, if possible, by conscientious preceptors; then, I feel well assured, that the time will not be far distant when the demands of the age will be fully met, and that our profession will not alone be willing to look back upon the past, but will glance with undimmed eyes to the future, confident of the same advancement that has characterized it during the last half century.

I have spoken of the demands of our patients upon us; I would now speak of our demands, one upon the other. This is, indeed, a subject of vast importance, for the day has, I think, gone by when an honest practitioner, wrapping his mantle about him, can say, "I will hold no communication with my professional brethren." The day, I repeat, is passing, for the demand is now for *concentrated* and *associated* effort. No practitioner can hold his own or make his mark, who thus retires to his secret chamber; but the noble mind says, "freely have I received, freely will I give," and cares not for patent rights, but gives to the profession with an ungrudging hand the result of his labors, giving them too for what they are worth, prepared also to ignore them when proven they are wrong or impracticable.

I will conclude with a short reference to a demand of the age which has just been met. I refer to a National Dental Association upon a strictly representative basis, which will, I feel assured, redound to the credit of the profession, stimulating *associated effort* in *local* societies, elevating the standard of dental science, creating upon every side a liberality of sentiment that will win for our art the title of a liberal, elevated, and scientific profession, and eventually the *true demands upon dental science* will be fully met.

THE BUCCAL SECRETIONS.

BY J. TAFT.

[Read before the American Dental Association, Washington, D. C., Aug. 1860.]

These natural products of the animal economy have received some attention and consideration by physiologists and pathologists all along through medical investigation, from the beginning to the present time.

In regard to the value and importance of these secretions, there has been some diversity of opinion, or rather in regard to their functions, though they have usually been regarded as playing a very important part in the incipient stages of digestion.

The insalivation of the food, at the time of mastication, *preparatory* to deglutition and digestion, have been considered the chief functions of the saliva. While these may be considered the prominent offices of this secretion, there are others accomplished by it of no insignificant character; such for instance as aiding in the enunciation of language. Without the moistening, lubricating influence of the saliva, how imperfectly, if at all, would language be uttered!

Again, this product could not be retained in the blood with impunity. It is necessary, for the health of the blood, that every secretion that nature designed should be withdrawn, be duly removed by its appropriate apparatus.

Within the scope of this paper we intend chiefly to consider the buccal secretions, with reference to the influence upon the teeth, both in a state of health and disease.

It seems scarcely necessary here to enter into a minute consideration of these secretions in a state of health; since this has been so often and so elaborately done already. A few remarks here in regard to the nature, composition, and elaboration of the saliva, will, however, not be out of place.

The product usually found in the mouth is denominated mixed saliva. It consists of the secretions elaborated by the buccal mucous membrane, as well as by the various salivary glands.

The saliva, as ordinarily found in the human mouth, is an opalescent, or faintly bluish-white fluid; it is viscid, tenacious, inodorous, and tasteless. After being at rest for a time, it deposits a grayish-white sediment; this consists principally of epithelium scales; these are not seen in the fresh saliva, but soon deposit themselves when the fluid is at rest, and exposed to the air; mucous corpuscles also exist to some extent in the saliva.

UNMIXED SALIVA.—The products of the different salivary glands exhibit some variety in composition. The saliva of the same person under different physiological conditions, will be different in some respects, and in none more than in specific gravity. Various circumstances will modify it in this particular; such for instance as the amount and character of the food.

Wright has demonstrated that human saliva is more dense after food has been taken than when fasting.

The saliva of a healthy man who had lived for a week on a mixed diet varied in density from 1·0079 to 1·0085, while after a purely animal diet for an equal time, it varied from 1·0098 to 1·0176; and after a purely vegetable diet from 1·0039 to 1·0047.

He also remarks that moral emotions, (rather mental emotions,) atmospheric changes, light, sound, etc., exert an influence on the density of the saliva. In two hundred cases he found the specific gravity of the saliva to range between 1·0069 and 1·0089.

Pure saliva should be obtained from the ducts of the salivary glands, in order that it may have no admixture of mucus, nor any foreign substance; it should also be obtained without the aid of irritants or stimulants. "A very simple and ready method of collecting a large quantity of saliva in a short time, is by exciting a strong pressure under the chin, and at the same time titillating the palate with a feather: a feeling of strangulation immediately ensues, during which the saliva is rapidly ejected from the mouth."

The glands that elaborate the saliva are the following, viz., the parotid, the submaxillary, and sublingual. The general features of the products of these different glands are very similar; though some have affirmed that a marked difference is found in many cases. My own experiments have shown but slight difference in the saliva from the different glands.

Pure saliva is perfectly limpid and colorless, without odor or taste, and incapable of being drawn out into threads, and of a distinctly alkaline reaction.

Prolonged hunger or the use of indigestible or stimulating food causes the secretion of concentrated saliva. During fasting it approximates, and in prolonged abstinence attains an acid reaction. It is definitely alkaline during and immediately after meals. Its character is quite variable under different pathological conditions; but of this hereafter.

The saliva always possesses the following ingredients:—

First—Potash, soda, and lime, combined with organic matter.

Second—An extractive matter soluble in alcohol, precipitable by tannic acid.

Third—Sulpho-cyanide of potassium.

Fourth—Potash salt.

Fifth—Epithelium and mucous corpuscles; these are very slight in pure saliva.

Sixth—Chlorides of sodium and potassium.

Seventh—Traces of phosphates.

There have been many experiments and analyses made upon the saliva, almost every one of which differs in some slight degree from all the others. These differences, however, are not greater than should be expected, owing to the different specimens operated upon, and the difference in the modes of conducting the experiments. Notwithstanding the discrepancies that have been exhibited by these different experiments, yet the leading features and characteristics have been manifestly the same, and fully established.

It is difficult to estimate the amount of saliva secreted in a given time; there are so many circumstances that modify the quantity, that it is difficult to arrive at anything very definite in this respect.

It is regulated in quantity by the condition of the patient, either constitutional, or local, or both. When there is no abnormal condition it will be subject to fluctuations, dependent upon the character of the food employed, and the manner of using that food. Dry food calls forth more saliva than moist, and hard far more than soft; substances of a pungent or irritating nature more than mild pleasant substances. The act of mastication is the most common exciting cause of the secretion of saliva.

The movement of the mouth in speaking and singing excites a flow, unless the speaker is in a high state of mental excitement; then the secretion may be arrested altogether, as is often experienced by timid speakers.

The flow of saliva continues for a brief period after the use of food. Food mixed with water requires very little saliva.

Colin, in his observations on the secretion of saliva in the solidungulous animals, remarks that the secretions of the two parotids alternate; the parotid of the side on which mastication is going on secretes at least one-third more than that of the other side; and when mastication is changed to the other side, the corresponding parotid goes vigorously to work: the action of the first partially ceases.

The same rule operates in the secretion of the human saliva, though probably not to quite the same extent.

The parotid glands yield about two-thirds of the whole amount of the saliva elaborated; the submaxillary about one-twentieth, and the sublingual the remainder. The amount of saliva is governed by circumstances. During sleep there is little or no saliva secreted. The sight and odor of food will usually excite a flow of saliva, particularly if there is hunger. Nausea will generally excite a free flow of the buccal fluids; at such a time the mucous glands become especially active.

The various mental conditions operate variously upon the salivary glands: fear diminishes the secretion very much; fright checks it entirely; anger also diminishes it; while good humor and mirth increase the secretion. Erotic emotions increase the secretion of the mucus considerably, and that of the saliva to some extent. Grief augments the secretion of both the saliva and mucus.

Fluctuation in the quantity of water in the blood has but little influence upon the amount of saliva elaborated in a given period. Neither does it change the relative proportion of the solid constituents of the saliva.

THE OBJECTS OF THE SALIVA.—Lehmann remarks, that the office of the saliva may be regarded as threefold, viz. mechanical, chemical, and dynamical.

Many kinds of food have but little moisture, and require to be moistened with the saliva in order that more perfect mastication may be accomplished, and especially that the act of deglutition may be accomplished with facility; it lubricates the bolus, and makes it manageable in the mouth. Perfectly dry food in the mouth is unmanageable. Without the moistening and lubrication of the food in the mouth, the mucous membrane would be irritated, and ultimately highly diseased by friction; this would result to the mucous membrane of the throat and œsophagus, as well as to that of the mouth.

The food is prepared by insalivation for being most perfectly acted upon by the digestive fluids. *The chemical* action of the saliva upon the food is a question upon which there is much diversity of opinion; some maintaining that it serves only to moisten the food, and at that point its influence ceases; others contend that it exercises a concurrent influence with the gastric fluids throughout the process of digestion. There are some points, however, that are well established. By insalivation the food is much better prepared for being acted upon by the gastric fluid than if it was not moistened at all, or than if moistened simply with water. Again, starch is converted into sugar by the action of the mixed saliva. This is probably accomplished by the mucus. Experiments have been introduced that lead us to conclude that the unmixed saliva will not produce that result.

Lehmann remarks, "it can, therefore, no longer be doubted that the saliva in a normal condition, when it is mixed with the food, possesses the property of converting starch into sugar."

Wright considers that one of the more prominent functions of the saliva is that of stimulating the stomach, and thus promoting the digestive process. This rests, however, quite as much upon hypothesis as demonstration.

PATHOLOGICAL CONDITIONS.—The diseased and unnatural conditions of the buccal secretions have not received that attention and investigation which we think the subject demands; this arises from the supposition that the subject is one of little importance, and from the difficulties attending such investigation.

The saliva is subject to many and great changes, by disease. The saliva proper may be changed from its natural to a definitely acid reaction; or it may be changed to more than its alkaline condition. This latter is exhibited when salivary calculus is rapidly deposited upon the teeth.

Any change of the mucus is usually to an increased acidity. When this condition is produced to such an extent that it is not neutralized by the saliva, as is generally the case when green tartar is deposited upon the teeth, it then becomes a source of mischief.

Probably in no cases except those of an extreme character is there any direct injury upon the teeth by these changes of the saliva; but that the decomposition of foreign substances in the mouth is greatly facilitated by these changes, there can be no doubt.

The extent of the injury resulting from vitiated secretions will be exceedingly various, depending upon a great variety of modifying circumstances.

The saliva becomes changed to an abnormal or diseased condition in two ways. First, by a vitiated state of the blood, and second, by a diseased condition of the glands; the latter is often complicated with the former. The saliva is more frequently affected by a deteriorated state of the blood; but the mucus by an unhealthy condition of the mucous follicles. These being situated in the mucous membrane near the surface, are more exposed than the salivary glands to the influence of local irritating causes.

The salivary glands are often required to perform more than the natural amount of labor, sometimes from local stimulants, as in the use of tobacco, or any similar agent; and from the constant use of the jaws in mastication, and from general constitutional causes, as in ptyalism, and various vitiated conditions of the blood.

When any organ is over-tasked, its production is necessarily deteriorated. A general inflammatory condition of the system produces an acid state of the saliva. Rheumatic affections, if general, produce the same result.

In febrile diseases the secretion of the saliva is very much diminished and sometimes checked altogether; then, the secretion of mucus being kept up, the teeth suffer injury, for the mucus, at such times, is always in a vitiated condition when secreted, and changes rapidly to a worse condition while in the mouth. The water evaporates and leaves a thick tenacious sordes covering the teeth, and lining the mucous membrane of the mouth. During this state of things, the teeth, without great care, are injured extensively and rapidly. The utmost care should be exercised to keep the teeth clean during a time of sickness, and especially when this peculiar condition exists. Much of the injury attributed to medical agents is dependent upon just the state of things to which reference has been made.

This vitiated, thickened, decomposing mucus will act directly and with great rapidity upon the teeth. It also facilitates the decomposition of the foreign substances with which it may come in contact, or commingle, and thus indirectly operate an injury upon the teeth.

A peculiarly vitiated state of the saliva is often found in connection with a lymphatic temperament, especially where there is a strumous diathesis. The saliva is viscid, somewhat thickened, is easily drawn out into shreds or strings; it does not readily mix with the atmosphere, does not become frothy. Usually when there is this state of the saliva, the teeth decay very rapidly, and are very sensitive, especially if the constitution of the teeth is good or medium; but if they are poorly organized, the vitality may be destroyed in advance of the decay. Saliva in this condition operates rapidly upon the teeth, both directly and indirectly. All the care that can be bestowed upon the teeth in respect to cleanliness will not arrest caries nor change its character while the buccal secretions remain in the condition just described. The mucous membrane of the mouth is always in a more or less irritable condition in these cases, and this will be kept up during this state of the saliva, and probably by its influence chiefly.

In order to remedy the evil results from this condition of the saliva, it must be restored to health; this can only be done by constitutional treatment, for it doubtless depends upon a depraved state of the blood. The secreting organs are, doubtless, always more or less affected; but when the original cause of the difficulty is removed, the secreting apparatus will assume a normal condition and a healthy action.

There is another depraved condition of the saliva not so marked in character nor injurious in its effects as that just referred to. It is characterized by a semi-oily condition; it is free from that tenacity and stringiness exhibited by some other depraved conditions. It insinuates itself into every interstice where it can at all approach; it will moisten the surfaces of the teeth when the utmost care is taken to protect them; the dentist will thus often find himself exceedingly annoyed by saliva of this character. Where it exists, it is almost impossible to keep an operation dry. This peculiarity is derived from the mucus, which in such instances is elaborated very freely.

The pathological changes and conditions to which the buccal secretions are subject is a matter upon which but little has been written, and less investigation made, especially with reference to their influence upon the teeth. It is a field in which investigation is somewhat difficult, yet there are no insurmountable difficulties in the way; it may be as thoroughly explored as some that have received much attention. It is an exceedingly important subject to the dentist and his patient; one that we all have neglected too long. Now in the future let us give this subject the attention its importance demands.

THE ANATOMY, PHYSIOLOGY, PATHOLOGY, AND REMEDIAL TREATMENT OF THE FIFTH PAIR OF NERVES.

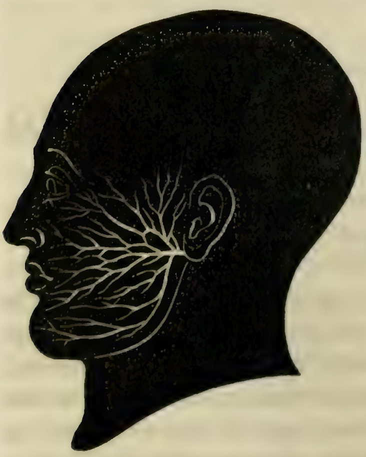
BY J. H. M'QUILLEN, D.D.S.

[A Synopsis presented to the American Dental Association, Washington, D. C., August, 1860.]

WHEN merely regarding the dental organs as isolated portions of the human economy, the various evolutions which they undergo in the progress of their growth, the changes of maturity, the removal of the first set, and the replacement of more numerous and durable successors, and the different casualties to which these are subjected, are each and all interesting and important subjects of inquiry—but when directing attention to their sympathies, as organs of a curiously complicated structure, in alliance with the brain, through nerves which, in addition, are connected with the great sympathetic nervous system, and which brings them in close relation with the other organs concerned in nutrition, the varied influences they possess become an additional and more extended field of observation. It must be evident, therefore, to every medical and dental practitioner, that a correct knowledge of the anatomy and physiology of the fifth pair of nerves, and of the intimate relations existing between them and the nervous system generally, is indispensable to a proper appreciation of the pathological conditions to which these nerves are liable, and the sympathetic derangements frequently developed in other portions of the economy, induced primarily by dental irritation.

It may be truly said, that the first step toward the cure of disease, is to discover what the disease is, and where it is situated. The search, however, to determine what organ or function is deranged, must be most vague and indefinite without a knowledge of the structure, offices, and relations which the various parts bear to each other and the organism generally. The practice of medicine, surgery, and dentistry afford numerous examples illustrating the position, that a sound and rational practice in either department must be based upon a correct knowledge of anatomy and physiology. To no portion of the human economy, however, does this remark apply with more force than to the fifth pair of nerves; for, prior to the valuable discoveries of Sir Charles Bell and other investigators, with regard to the functions of the cranial nerves and the general doctrines of nervous action, it was supposed that the seat of that painful affection, *tic douloureux*, was in the *facial* nerve or porta dura of the seventh pair. Carefully conducted experiments, however, have clearly demonstrated, not only that the facial nerve is, to a very great degree, devoid of sensibility, and, therefore, cannot be the seat of a painful affection, but that, emerging from the stylo-mastoid foramen, and then passing through the parotid gland, to be eventually distributed to the superficial muscles of the face, in the form of a plexus, named *pes anserinus*, it is purely a motor nerve, upon the integrity of which the expression of the countenance and the varied play of the features depend. Before this was ascertained, section of the nerve at the stylo-mastoid foramen was frequently performed for the relief of patients suffering under *tic douloureux*, but with no other result than

Fig. 1.



Facial Nerve.—From Dalton.

inducing paralysis of the superficial muscles and complete loss of expression on the side of the face operated upon, the patients, after the operation, still suffering as much from the disease, and, in addition, being unable to close the eyelids, move the lips, or elevate the ala nasi of the affected side. Though essentially a motor nerve, it must be acknowledged that the branches of the porta dura possess, in addition, a certain amount of sensibility; this appears to be due, however, to the numerous anastomoses which take place at various points between it and the fifth pair of nerves.

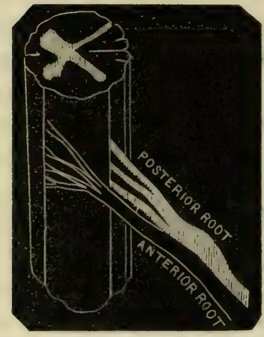
In alluding to the importance of a knowledge of the anatomy and physiology of the fifth pair of nerves, reference has also been made to the relations existing between them and the nervous system generally. Now, to fully comprehend the cerebral, thoracic, and abdominal disturbances which unquestionably arise from dental irritation, particularly in early childhood, it is necessary that the three great divisions of the nervous system—the cerebro-spinal, the true spinal, and the great sympathetic—should be made the subject of careful study and observation. It would be out of place, and foreign to the purpose of this communication, however, to enter into a detailed consideration of these important subjects; but it may not be amiss to direct attention to them in a cursory manner, so that the relations existing between them and the fifth pair of nerves may be made apparent to all, and also that it may stimulate those who are not perfectly familiar with these subjects to cultivate a thorough and intimate acquaintance with them.

The *Cerebro-Spinal* nerves consist of *sensory* and *motor* nerves, which pass to, and proceed from, the *brain*, along its base, or *along the spinal cord*, to every part of the economy, giving sensation and voluntary motion; in other words, being the medium through which the mandates of the will are transmitted, making any part of the organism move responsive to it.

The *Reflex* or *True Spinal* nerves consist of *excitor* and *motor* nerves, which, however, only run to and proceed from the *spinal cord* and its intra-cranial continuation to the different parts of the body, and preside over the involuntary movements of the respiratory circulation and digestive organs. There is little or no evidence of a disposition to involuntary movements in the extremities of the human body during health or in the waking condition, as they are restrained by the controlling influence of the brain; but under the influence of certain medicines, and in certain diseased conditions of the brain and spinal cord, they become quite marked.

The *Cerebro-Spinal* and the *True Spinal Nerves* combine to form—though no *actual* union of their fibres take place—the thirty-one pairs of nerves coming off from the sides of the spinal marrow at regular intervals, and passing out through the intervertebral foramen, to be distributed to the neck, trunk, extremities, and internal organs. These two systems are each connected with the spinal cord by two roots, anterior and posterior, the latter being the larger, and having formed upon them, in the intervertebral foramen, a ganglion. A little beyond this ganglion the anterior and posterior roots coalesce—their fibres, however, remaining distinct—and form the compound or mixed spinal nerves, which, after issuing from the intervertebral foramen, divide into anterior and posterior branches, each containing fibres from the different roots. Every spinal nerve, therefore, contains four sets of fibres, two belonging to the cerebro-spinal and two to the true spinal; the first set conveying sensation to, and volition from, the brain; the second set conveying impressions to the spinal axis, and reflex motor influence to the muscles.

FIG. 2.



SPINAL CORD, WITH NERVE ARISING BY ANTERIOR AND POSTERIOR ROOTS.—From GREY.

FIG. 3.

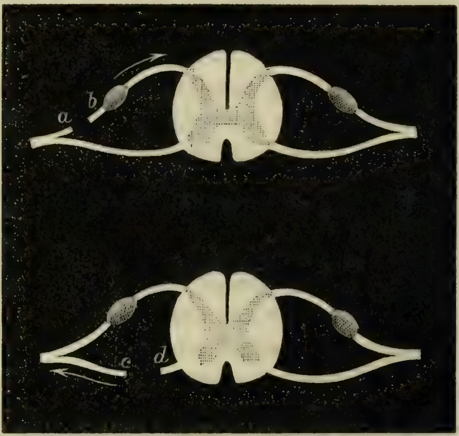
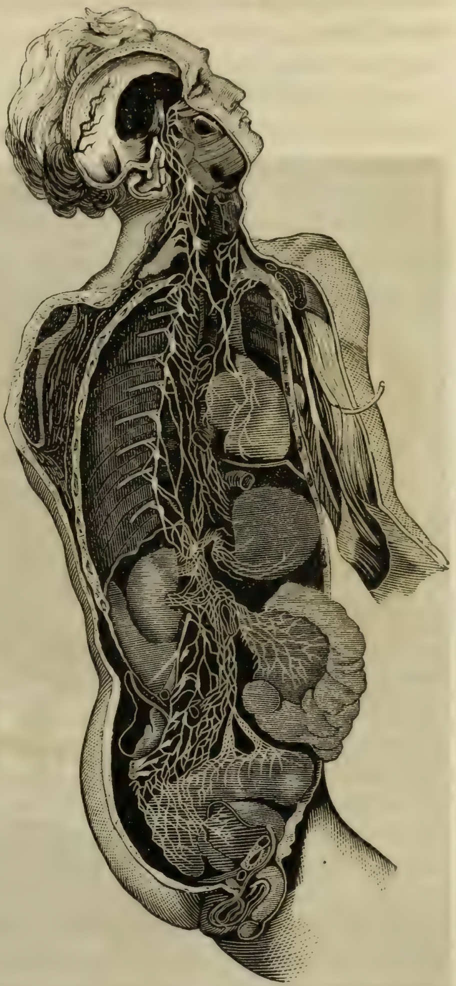


DIAGRAM OF SPINAL CORD AND NERVES.—From DALTON. The posterior root is seen divided at *a b*, the anterior at *c d*.

By carefully conducted experiments, the functions of the anterior and posterior roots of the spinal nerves have been clearly demonstrated: when, for instance, the anterior root of one of the nerves is cut, loss of *motion*, but not of *sensation*, occurs in the part to which the nerve is distributed; if, on the other hand, the posterior root is cut, loss of *motion*, but not of *sensibility*, supervenes. Hence it is justly inferred that the anterior root is *motor* and the posterior root *sensory*.

The *Great Sympathetic* system consists of a double chain of *ganglia*, commencing at the base of the brain and extending downward on each side and in front of the vertebral column to the os coccyx, where they unite at the ganglion of *Impar*. This series of ganglia is the connecting medium between all the nerves of the body, and anastomoses with the cranial and spinal nerves as they emerge from their respective cavities. Thus the *ophthalmic*, the *spheno-palatine*, the *otic*, and the *submaxillary ganglia*, occupying spaces between the bones of the cranium and of the face, are connected with each other and with the three branches of the fifth pair of nerves; and each of the three *cervical*, twelve *thoracic*, five *lumbar*, and four *sacral* ganglia situated in front of the vertebral column receive motor and sensory filaments from the cerebro-spinal system. In addition to being connected with each other by slender longitudinal filaments, and with the cranial and spinal nerves, the ganglia give off branches which form numerous plexuses, and are distributed to the heart, liver, intestines, kidneys, blood-vessels, and other organs, over which the consciousness and the will have no control. The office of the sympathetic is supposed to consist, for the most part, in placing the organic in relation with the animal functions. This, however, cannot be the exclusive office of the sympathetic, for, being composed of white and gray neurine, it is reasonable to look for a compound function, viz., sensation and motion; and observation and experiment sustain the position that it does bear such relations to the viscera. After a careful investigation of all the facts connected with this system of nerves, physiologists generally have arrived at the conclusion that it exercises a threefold office: "first, that of a sensitive nerve to the parts to which it is distributed; secondly, that of a motor nerve for certain muscular parts; and thirdly, that of a nerve for the blood-vessels, supplying them with the power of contractility." In addition to this, as every ganglion is connected with other ganglia, when one of them is excited, the sensation awakened in the first may be transmitted along the entire chain, and thus arouse a train of phenomena, which may be slight or grave, according to the condition of the system and the nature of the exciting cause.

FIG. 4.



COURSE AND DISTRIBUTION OF THE GREAT SYMPATHETIC.—From DALTON.

After these necessary and introductory remarks, to prevent confusion, it will be proper to take up the subject-matter of the paper in sections, commencing with a condensed, but it is trusted a comprehensive description of the

ANATOMY OF THE FIFTH PAIR OF NERVES.

Fig. 5.

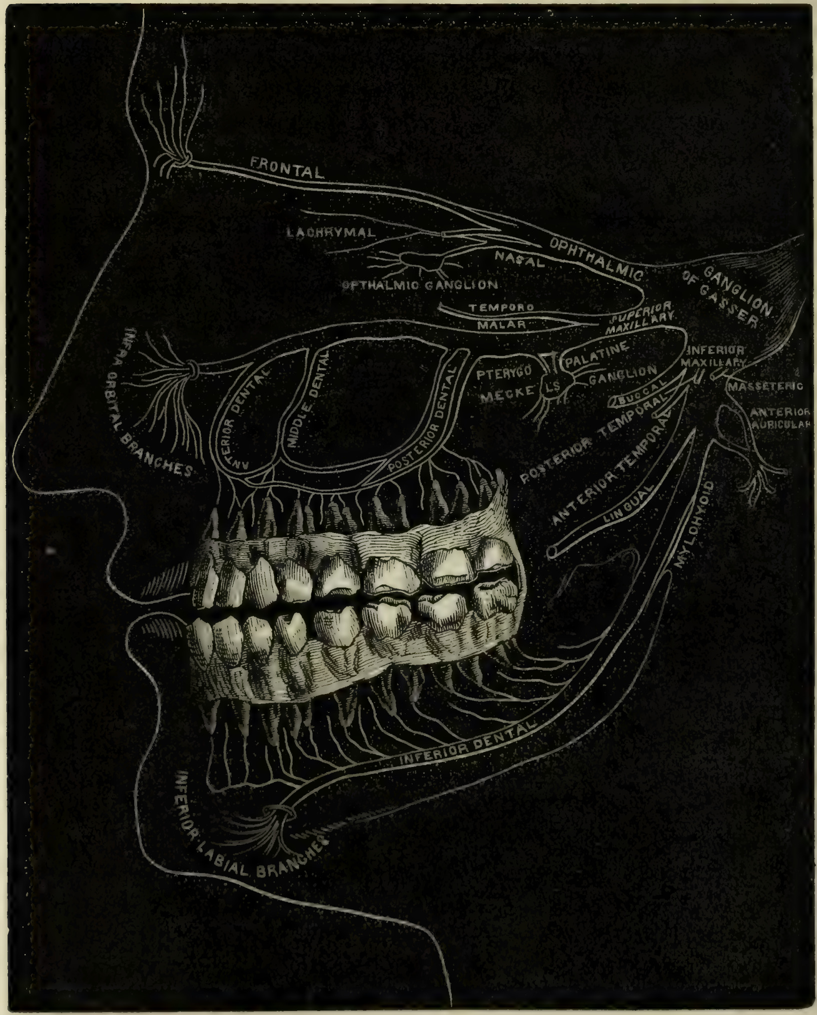


Diagram modified from Tomes.

The Fifth, Trifacial, or Trigeminus Nerve is analogous to the spinal nerves in its origin by two roots, anterior and posterior, or motor and sensory, the latter, also, like them, being the larger root, and having a ganglion upon it.

The *posterior root* has its origin, or, physiologically speaking, its termination, in the lateral tract of the medulla oblongata, immediately behind the olivary body, and is composed of thirty or forty fasciculi, which are divisible into a hundred filaments. Tracing the root from its point of termination outward, it is found to ascend to the pons varioli, pass between its fibres, and then emerge from it in a filamentous trunk, where the pons joins the crus cerebelli; it then passes forward and expands into the large semilunar ganglion of Gasser, which rests in a depression on the upper surface of the petrous portion of the temporal bone. From the ganglion of Gasser three large trunks arise, of which the first or *ophthalmic* passes out of the skull through the sphenoidal fissure, the second or *superior maxillary* through the foramen rotundum, and the third or *inferior maxillary* through the foramen ovale.

Turning to the *anterior* or *motor root* of the fifth, it is found to consist of a very few fasciculi, which arise from the pyramidal body of the medulla oblongata, and pass through the pons varioli close to the sensory root, without, however, any union taking place between the fasciculi of the two roots. After emerging from the pons, the motor root passes under the sensory root and the ganglion of Gasser, and escapes from the skull through the foramen ovale, where it unites with the inferior maxillary branch just beyond the *otic* ganglion.

Proceeding now to trace the course of the three branches given off from the ganglion of Gasser, the first presented is the

OPHTHALMIC NERVE.

The *Ophthalmic Nerve*, which comes off from the upper angle of the ganglion, is about an inch in length, somewhat flattened, and runs in the direction of the sphenoidal fissure, through which it passes to the orbit, where it divides into three branches: the frontal, lachrymal, and nasal.

The *Frontal Nerve*, the largest branch of the ophthalmic, passes forward for some distance along the upper part of the orbit, and then divides into the supra-orbital and supra-trochlear, the first escaping from the orbit by the supra-orbital foramen, the second passing to the angle of the orbit. They are distributed to the integument of the forehead, upper eyelid, and the conjunctiva.

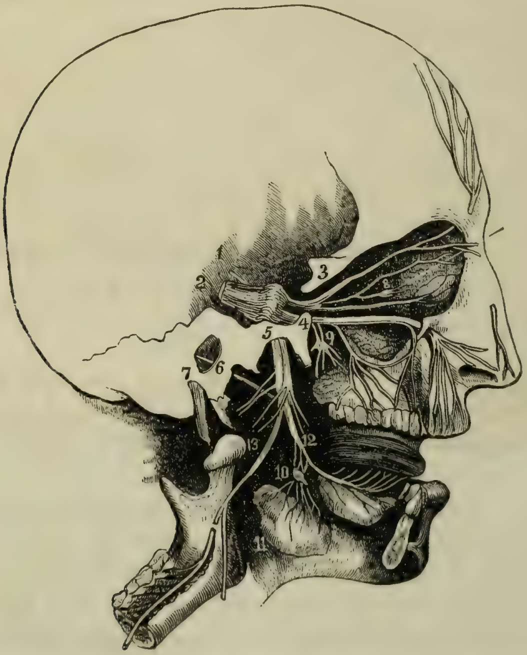
The *Lachrymal Nerve*, the smallest division of the ophthalmic, proceeds along the external part of the orbit to the lachrymal gland, where it divides into a superior and inferior branch, which are distributed to the upper and under surface of the gland, upper lid, and outer angle of the eye; the superior branch, in addition, anastomosing with the facial nerve.

The *Nasal Nerve* crosses the optic nerve and leaves the orbit by the anterior ethmoidal foramen, and then passes through the slit-like opening by the side of the crista gala of the ethmoid bone, and descends into the nasal cavity, where it divides into an internal and an external branch, the first to be distributed to the mucous membrane of the interior, and the second to the integument of the exterior of the nose. The nasal nerve also gives off in the orbit several branches: a *ganglionic branch,* which enters the upper angle of the *ophthalmic* ganglion; two or three long *ciliary branches*, which pierce the sclerotic coat of the eyeball, and are distributed to the iris; and an *infra-trochlear branch,* which passes to the inner angle of the eye, to be distributed to the lachrymal sac.

OPHTHALMIC GANGLION.

The *Ophthalmic, Lenticular,* or *Ciliary Ganglion* is a small, flattened, quadrangular body of a reddish-gray color, (like other sympathetic ganglia,) situated within the orbit, in close proximity to the optic nerve. It unites by communicating branches or roots with the carotid plexus, the *third nerve* or *motor-oculi,* and the nasal branch of the ophthalmic nerve, and gives off about ten short ciliary nerves from its anterior border, which pierce the sclerotic coat of the eyeball, and are distributed upon the iris.

FIG. 6.



FIFTH PAIR OF NERVES.—From SIR CHARLES BELL. 1, small root; 2, large root, with ganglion of Gasser; 3, ophthalmic nerve; 4, superior maxillary; 5, inferior maxillary; 6, chorda tympani; 7, facial nerve; 8, ophthalmic ganglion; 9, Meckel's ganglion; 10, submaxillary ganglion; 11, submaxillary gland; 12, lingual nerve; 13, inferior dental.

THE SUPERIOR MAXILLARY NERVE.

The *Superior Maxillary*, or second division of the fifth nerve, comes off from the middle of the ganglion of Gasser, and pursues a horizontal course to the foramen rotundum, through which it passes to cross the spheno-maxillary fossa, and then enters the canal in the floor of the orbit, along which it runs to the infra-orbital foramen. The branches of the superior maxillary are the *Orbital*, *Spheno-palatine*, *Posterior*, *Middle*, and *Anterior Dental*, and *Infra-orbital*.

The *Orbital* or *Temporo-Malar Nerve* enters the orbit and divides into two branches, the *temporal* and *malar.* The *temporal* branch ascends along the outer wall of the cavity and anastomoses with the lachrymal branch of the ophthalmic, and then passes through a foramen in the malar bone and enters the temporal fossa, where it communicates with the facial and the temporal branch of the inferior maxillary, and is distributed to the integument covering the temple and side of the face. The *malar* branch runs along the outer wall of the orbit, and eventually escapes through a foramen in the malar bone, and anastomoses with the infra-orbital and facial nerves in the cheek.

The *Spheno-palatine* branches are two in number, and pass to the ganglion of Meckel, in the pterygo-maxillary fossa.

The *Posterior Dental* branches arise from the superior maxillary nerve just before it enters the infra-orbital canal, and pass through small foramina in the tuberosity of the maxillary bone, and are distributed to the pulps of the upper molar teeth, lining membrane of the antrum, and gums.

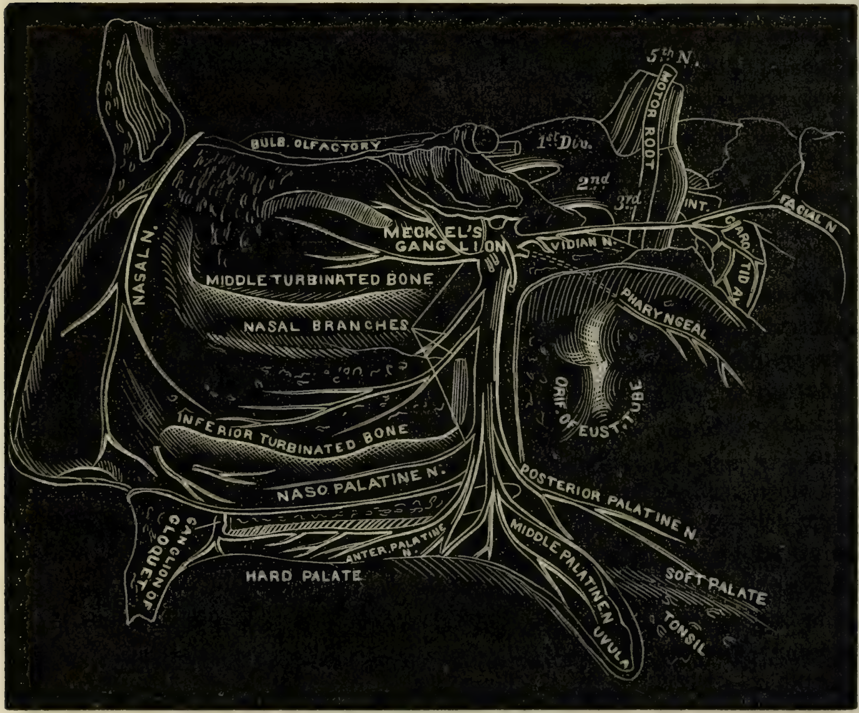
The *Middle* and *Anterior Dental* arise from the superior maxillary nerve in the infra-orbital canal, and pass through small foramina in the walls of the antrum, and are distributed to the pulps of the superior bicuspids, canines, and incisors, the lining membrane of the antrum, gums, and mucous membrane of the nares and palate. They also anastomose with the posterior dental.

The *Infra-orbital* branches, three in number, the *Palpebral*, *Nasal*, and *Labial*, are the terminating filaments of the superior maxillary nerve, which pass out of the infra-orbital foramen, and are distributed to the eyelids, nose, lips, and cheeks. They anastomose with the facial nerve.

SPHENO-PALATINE GANGLION AND ITS BRANCHES.

The SPHENO-PALATINE, OR MECKEL'S GANGLION. The largest cranial ganglion is situated, as before stated, in the pterygo-maxillary fossa. The nerves connected with this ganglion are the *spheno-palatine*, which ascends to the superior maxillary nerve; the *palatine*, (anterior, middle, and posterior,) which descend, pass through the posterior palatine foramen, and are distributed to the hard and soft palate, tonsils, and mucous membrane of the nares; the *nasal* and *naso-palatine* branches, which enter the nasal fossa by the spheno-palatine foramen, and are distributed to the mucous membrane of that cavity—the naso-palatine passing forward and joining its fellow in the foramen incisivum, and forming the ganglion of *Cloquet;* and the *Vidian*, which passes backward from the ganglion through the Vidian foramen, and divides into the *superficial* and *deep petrous*, the latter joining the carotid plexus, while the former, continuing on, first enters the *hiatus* Fallopii, and passing through it to the aqueductus Fallopii, joins the facial nerve. Properly speaking, this is the motor root of the spheno-palatine ganglion, and arises from, rather than passes to, the facial nerve.

Fig. 7.



Modified from Gray.

Inferior Maxillary Nerve.

The Inferior Maxillary Nerve comes from the lower and posterior part of the ganglion of Gasser, and passes out of the cranium through the foramen ovale, where a small ganglion, the *otic*, is found, and just at this point the motor root unites with the inferior maxillary nerve. Soon after this union the nerve divides into two branches, the external and the internal.

The external division sends off five branches, the *Masseteric*, *Deep Temporal*, (two in number,) *Buccal*, and *Pterygoid*, to the different muscles whose name they bear.

The internal and larger branch of the inferior maxillary divides into the *Auriculo Temporal*, the *Inferior Dental*, and the *Lingual* or *Gustatory*.

The *Auriculo Temporal* arises by two roots, and passes directly backward behind the articulation of the lower jaw, and then ascends between that joint and the ear, being covered by the parotid gland; on emerging from beneath the gland, it divides into the *anterior* and *posterior temporal*, which are distributed to the integuments of the temporal region. Branches are also given off which pass to the parotid gland, the pina, and meatus of the ear—and it has, in addition, branches of communication with the otic ganglion and the facial nerve.

The *Inferior Dental Nerve* passes to the posterior dental foramen of the lower jaw, and running along the canal in the middle of the bone, gives off branches to the pulps and periosteum of all the lower teeth, and also sends filaments to the gums, a portion of the nerve emerging from the anterior mental foramen, and is distributed to the mucous membrane and integument of the lower lip and chin, and anastomosing with the facial nerve. Prior to entering the foramina a small branch, the mylo-hyoid, is given off to the muscle of that name; it also sends filaments to the digastric muscle.

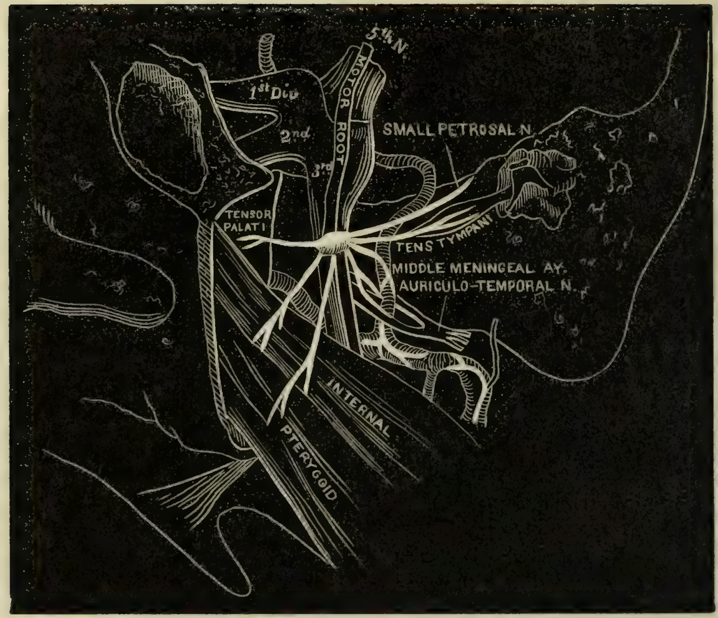
The *Gustatory* or *Lingual Nerve* passes downward from its origin to the side of the root of the tongue, which it enters above the submaxillary gland, and then curves forward, and, anastomosing with the hypoglossal nerve, diverges after this into several slight fasciculi, which terminate in the papillary structure of the tongue. It sends branches to the mucous membrane of the mouth, submaxillary ganglion, tonsils, and pharynx. The Chorda Tympani, a branch of the facial nerve, which arises from it in the aqueductus Fallopii, crosses the tympanum, and escapes through the fissura Glasseri, and, uniting with the gustatory nerve, accompanies it to the submaxillary ganglion.

THE SUBMAXILLARY GANGLION.

The *Submaxillary Ganglion* (See Fig. 10, diagram of Sir C. Bell,) is a small, round, or triangular body, which lies upon the gland of the same name, close to the *gustatory nerve*, from which it derives its sensitive filaments, the motor filaments coming from the facial nerve by the chorda tympani; it also communicates by longitudinal filaments with the superior cervical ganglion, and sends branches to the submaxillary and sublingual glands and the sides of the tongue.

OTIC GANGLION.

FIG. 8.



MODIFIED FROM GRAY.

The *Otic Ganglion*, as already stated, is a small oval ganglion connected with the inferior maxillary nerve, near the foramen ovale. It receives filaments of communication from the carotid plexus, a sensory root from the inferior maxillary branch of the fifth pair, a motor root from the facial nerve, and sends filaments to the tensor tympani muscle and the mucous membrane of the tympanum and Eustachian tube.

(To be continued.)

DENTAL TEACHINGS.

BY DR. WM. H. ATKINSON.

[Read before the American Dental Convention, Saratoga, N. Y., 1860.]

ALL teaching must needs flow to the mind from an intellectual plane above it, or it is but a repetition of knowledge already attained, and (if not forgotten) ready for *use*.

Had our teachings been *entire*, instead of fragmentary, such aphorisms as the above would have been uncalled for.

Science being a circle, it matters but little at what point in that circle we make our start. Nevertheless, there are certain divisions in this circle that it will facilitate progress to note, and begin at the line dividing them, and then travel either way to complete the curriculum.

And as "dental science" can, in the nature of things, be but a small division of general science, we will do well to take heed that we keep within the legitimate limits of that department.

Now if the first proposition, aphorism, or statement be true, we do not stand fully up (as individuals) to our aggregate advancement in every department of our knowledge, and hence some are on a plane above their fellows in some things, and they on a plane above us in others. So if our teachings and learnings have been fractional, we are, of course, not fit to lead in all departments.

To properly understand our relative positions, we must come in contact, compare notes; and this is best effected, not on a logical basis of argumentation, or long, prosy dissertations upon the details of our specialty of medical science, but by the free interchange of untrammeled thought; in a word, practical and scientific conversations.

If any object, and say "No man *can* do as well at an off-hand, prompt answering of queries," I have only to refer him to the explanatory note of the first aphorism in this paper to show him where he stands, which convicts him either of never having known the answer, or else having been so little interested in it as to permit it to be forgotten, and really gives us the best measure of the man. For who among us, if a sufficient time for research be allowed him, is not capable of collecting all that has ever been written on any given question by the shrewdest minds and most laborious hands, and thus steal the real thunder of some one else to flash forth its lightning to illuminate our worthless heads with the halo of a temporary glory, and thus entrap us into the error of hoping to find a reservoir, of all the knowledge treated of in the paper, in the head of the writer, only to be let down to zero when the proof of a few pointed questions are directly and well put! It is, gentlemen, depend upon it, only the offspring of *untruth*, and a desire to pass for more than we are worth, that first inaugurated this mode of doing up scientific discussions. An ambition to lead has taken hold of the great majority of our teachers in the various colleges and academies of scientific lore; and from this starting-point they have traveled a certain way and stuck their stakes, boldly (as ignorantly) asserting that all beyond was in the "unknowable" regions of dark nonentity. If you wish a certain proof of my assertion, please just retort back the same inquisition upon the "leader," that he unfeelingly put upon his pupil, and his reply will clearly define where he is. If he patiently goes through a clear and satisfactorily elucidated explanation, he *is* a leader, and worthy so to rank. But if he throws himself back upon his dignity, and measuredly says—"My dear sir, I wish you to know *you* cannot quiz *me;*" then he is beyond all question *not* a legitimate leader or teacher.

Probably no one has, during his whole career of instructing, been so pure and truthful as not (at some period or incident of his experience) to see his own portrait in this odious picture. But to those who are willing and determined to *advance* to the point where they will be able to stand the *test,* I would say you need not tarry in all the plain of sloth and error, but with the fleetness of the antelope flee to the pure elevations of the mountain fastness of science and truth, where the bare remembrance of former sins and trials shall only enhance your joy at being fully delivered from them, and being introduced to the blessed freedom that a knowledge of truth alone can give.

Then let us not imprison ourselves in false dignity and puerile conceptions, while the whole field of pure science and research lays open before us, inviting us to the rich culminations of her varied branches in a truly advanced and useful practice of a *living*, if not "well-established" profession.

And for the encouragement of those members of our specialty who have thought themselves the very men with whom knowledge was doomed to die, I cheerfully reiterate—"Where *sin* abounded, *grace* did much *more* abound!" and "Whosoever will, let him come and *partake* of the light *beginning* to focalize in the congregating of the most earnest of our body from time to time to illuminate the whole by the aggregation of each one's little ray, until, by the laws of affinity and impartation, we shall have equipoised the entire of what the mass possesses so perfectly, as to have banished the word 'fail' from our vocabulary."

Let each one freely open his mind, and not be frightened at his own shadow, but persistently keep it opened till it is filled with something to give out, and then truthfully and plainly project it; and I will warrant we will have a profitable time, especially if we follow the simple conversational plan. After each speaker has exhibited his pent-up goods—that have lain musting on his mental shelves so long that he forgot to remove them, if for no other purpose, to make place for new and more appropriate ones for the time and occasion—let any and all be free to propound questions to him touching the subject-matter of his speech.

In this way the ball will be at once easily set to rolling, and you who do not like to see it move, had better get out of the way, for, these conditions fulfilled, such a rate of progress will have been secured as will be a caution to all who like to continue in the old ox-team style.

The advantages resulting from such a course are too patent and numerous to require specific statement. I therefore will only name a few of the most important preliminaries:—

I. Freedom from dignity and restraint.

II. Fraternity and unity of *feeling* (the highest of our faculties) in the interchange of sentiments.

We ought to come together, not to manufacture, but to exchange mental commodities. And he who has come only to buy for the ready cash of attentive, intelligent listening, will probably go away quite well satisfied and instructed.

With something like the foregoing, and the following for a chart or tressel-board upon which to draw out designs, all may be benefited.

I. Be good and true.

II. So use thine own as not to infringe the right of thy fellow.

III. Do good and *no* harm all the days of thy life.

IV. When rebuked, count it a joy and evidence of preparation for the rebuker or rebuked to be advanced.

V. Let brotherly love continue.

Now after thus disturbing the current of your thoughts, I cheerfully and hopefully await the *moving* of the WATERS of Truth.

PROCEEDINGS OF DENTAL SOCIETIES.

AMERICAN DENTAL ASSOCIATION.

REPORTED BY GEO. T. BARKER, D.D.S.

THE Association met in Washington City, D. C., July 31, 1860, in the Hall of the Smithsonian Institution, and was called to order at half-past twelve o'clock.

Dr. Allport, of Chicago, upon taking the chair, made a few appropriate and pertinent remarks.

Minutes of the preceding meeting were read by the Secretary, Dr. Taft; and, after slight alteration, were adopted.

On motion of Dr. Barker, of Philadelphia, a committee of five was appointed by the Chairman to examine and report upon the credentials of delegates. The Chair appointed the following gentlemen: Drs. Barker, Clark, Fitch, Blake, and Hunt, as that committee.

Adjourned to meet at four o'clock.

AFTERNOON SESSION.

At the appointed hour the Association assembled. The Committee on Credentials reported that the following gentlemen were duly elected delegates to this Association:—

Washington City Dental Association—Drs. J. B. Gibbs and H. N. Wadsworth.

Cincinnati Dental Association—Drs. J. Taft and H. R. Smith.

Georgia Dental Association—Dr. F. Y. Clark.

Mad River Valley Dental Society—Dr. W. A. Pease.

Western Dental Society—Drs. W. W. Allport and A. Blake.

Indiana Dental Association—Drs. S. B. Smith and P. G. C. Hunt.

Kentucky State Dental Association—Drs. W. Muir Rogers and A. S. Talbert.

Pennsylvania Association of Dental Surgeons—Drs. S. Dillingham, J. H. McQuillen, J. F. Flagg, C. P. Fitch, D. McFarland, J. W. Van Osten, B. M. Gildea, and Geo. T. Barker.

Pennsylvania College of Dental Surgery—Dr. J. L. Suesserott.

Michigan Dental Association—Dr. Wm. Cahoon.

Mississippi Valley Association—Dr. Wm. H. Atkinson.

The report of the Committee was adopted.

Dr. McQuillen, of the Committee on Constitution, reported the proposed plan of organization, as published in the September number of the Dental Cosmos for 1859.

On motion, the report was accepted and the Committee discharged. On motion of Dr. Taft, the report was taken up in sections for adoption. Several amendments were offered, and the following Constitution was adopted.

CONSTITUTION.

I.—NAME.

This organization shall be known by the name of the American Dental Association.

II.—OBJECTS.

The objects of this Association shall be, to cultivate the science and art of dentistry, and all its collateral branches; to elevate and sustain the professional character of dentists; to promote among them mutual improvement, social intercourse, and good feeling; and to collectively represent and have cognizance of the common interests of the dental profession in every part of the United States.

III.—MEMBERS.

The members of this Association shall be exclusively practitioners of dentistry, holding their appointment to membership, either as *delegates* from local institutions, or as *permanent members.*

The delegates shall receive their appointment from permanently organized dental societies and dental colleges in the Union, each delegate holding his appointment for one year.

Each local society shall be entitled to send to the Association one *delegate* for every *five* of its active members, and the faculty of each college to send one of its members as a representative.

The permanent members shall consist of all those who have served in the capacity of delegates.

Each delegate and permanent member shall be entitled to debate and vote on all questions, and be eligible to any office in the gift of the Association.

To defray the expense of printing the *Transactions*, and to meet other incidental expenses, the sum of two dollars shall be assessed annually upon *all* the members present at meetings of the Association.

No member who is not present at a meeting of the Association shall be required to pay the annual assessment.

Each member elect, prior to the permanent organization of the annual meeting, or before voting on any question after the meeting has been organized, must sign these regulations, inscribing his name in full, specifying in what capacity he attends, and, if a delegate, the title of the institution from which he has received his appointment.

No one shall be permitted to address the Association before giving his name and residence, which shall be distinctly announced from the Chair.

IV.—MEETINGS.

The regular meetings of the Association shall be held annually, and commence on the last Tuesday in July. The place of meeting shall be determined each year by vote of the Association.

V.—OFFICERS.

The officers of the Association shall be a President, two Vice-Presidents, Corresponding Secretary, Recording Secretary, and a Treasurer. They shall be nominated by a special committee of one member from every State represented at the meeting, and shall be elected by vote on a general ticket. Each officer shall hold his appointment for one year, and until another is elected to succeed him.

The President shall preside at the meetings, and perform all the duties that custom or parliamentary usage may require.

The Vice-Presidents.—In the absence of the President, one of the Vice-Presidents shall assume all the duties of the office; and, in the absence of these officers, a Chairman *pro tem.* shall be appointed *viva voce.*

The Corresponding Secretary shall attend to the correspondence with the Association, and give due notice of the time and place of each annual meeting.

The Recording Secretary shall keep accurate minutes of the proceedings of the Association, preserve the archives and unpublished transactions, and attend to all other duties that appertain to the office.

The Treasurer shall have the immediate charge of the funds and property of the Association, and shall present a balanced account, duly authenticated, at every regular meeting, to the Committee of Publication.

VI.—STANDING COMMITTEES.

The following Standing Committees shall be organized at every annual meeting, to prepare, arrange, and expedite business for each ensuing year, and to carry into effect the orders of the Association not otherwise assigned, namely: a Committee of Arrangements, of Publication, on Prize Essays, on Dental Physiology, on Dental Chemistry, on Dental Pathology and Surgery, on Mechanical Dentistry, and on Dental Education and Dental Literature.

The Committee of Arrangements shall be composed of three members, one of whom, if practicable, shall reside in the place at which the Association is to hold its next ensuing annual meeting. They shall be required to procure suitable accommodations for the meeting; to verify and report upon the credentials of membership; to receive and announce all essays and memoirs voluntarily communicated, either by members of the Association, or by others through them; and to select and announce, at the earliest period practicable after their appointment, subjects for discussion at the succeeding annual meeting.

The Committee of Publication shall consist of five members, of which the Corresponding Secretary and Treasurer must constitute a part. They shall be authorized to employ a competent reporter, and to furnish an accurate report of the proceedings of each meeting. They shall superintend the publication and distribution of such portions of the Transactions as the Association may direct. This committee shall audit the accounts of the Treasurer, and present a statement of the same in the annual report of the committee, which report shall specify the character and cost of the publications during the year, the number of copies still at the disposal of the Association, and the funds on hand for further operations. The committee shall be instructed to print, at the beginning of each volume of the *Transactions*, the following disclaimer, viz.: *The American Dental Association*, although formally accepting and publishing the report of the various standing committees and essays read before the Association, holds itself wholly irresponsible for the opinions, theories, or criticism therein contained, except when so decided by special resolution.

The Committee on Prize Essays shall consist of five members. Two medals, not exceeding in value *fifty dollars* each, may be awarded to the best two communications reported on favorably by the committee, and directed by the Association to be published.

The Committees on Dental Physiology and Dental Chemistry shall be composed of three members each. It shall be the duty of these committees to present annual reports in their special departments, embracing, if practicable, the results of original investigation.

The Committee on Dental Pathology and Surgery, consisting of five members, shall have under consideration everything that appertains to pathological conditions of the teeth and adjacent tissues, and the remedial agencies embraced under the head of operative dentistry. Improvements in the latter department, if expedient, shall be thoroughly tested, and reported on before the Association by this committee.

The Committee on Mechanical Dentistry shall consist of five members, who shall receive and take cognizance of plans, improvements, and specimens in this department, that may be presented by persons desiring to bring them before the Association. The committee shall be authorized to reject those they may deem unworthy of presentation.

The Committees on Dental Education and Dental Literature, consisting of three members each, shall make annual reports on these important subjects.

The selection of the chairmen and members of the different committees, shall be referred to the Nominating Committee.

AMENDMENTS.

These articles may be altered and amended with the consent of three-fourths of the members present, at the subsequent annual meeting to that at which such amendment or alteration may have been proposed.

THE ORDER OF BUSINESS.

The order of business at the annual meetings of the American Dental Association shall at all times be subjected to the vote of three-fourths of all the members in attendance; and, until permanently altered, except when for a time suspended, it shall be as follows, viz.:—

1. The temporary organization of the meeting, preparatory to the election of officers.
2. The report of the Committee of Arrangements on the credentials of members.
3. The calling of the roll.
4. The reading of minutes.
5. The election of officers.
6. The reception of members not present at the opening of the meeting, and the reading of notes from absentees.
7. The reading and consideration of the stated annual reports from the standing committees.
8. The reading of essays.
9. The discussion of topics selected for the session.
10. The selection of the next place of annual meeting.
11. Appointment of standing committees.
12. Resolutions introducing new business, and instructions to the permanent committees.
13. Unfinished and miscellaneous business.
14. Adjournment.

In acknowledgment of having adopted the foregoing propositions, and of our willingness to abide by them, and use our endeavors to carry into effect the objects of this Association, as above set forth, we have hereunto set our names:—

NAMES OF MEMBERS.	RESIDENCE.	INSTITUTIONS REPRESENTED.

Adjourned to meet on Wednesday morning at ten o'clock.

SECOND DAY—MORNING SESSION.

The Association was called to order at ten o'clock. The minutes of previous session were read and adopted.

Dr. H. R. Smith, of Cincinnati, moved that the Association extend an invitation to the profession and others of Washington City, who may desire to be present during our deliberations. Adopted.

The following were selected to constitute the Nominating Committee, being one member from each delegation present: Drs. J. B. Gibbs, F. Y. Clark, H. R. Smith, W. H. Pease, J. Foster Flagg, J. L. Suesserott, A. Blake, P. G. C. Hunt, W. M. Rogers, and W. H. Atkinson.

The Committee reported the following:—

For *President*, DR. W. H. ATKINSON, of Cleveland, Ohio.

1st. *Vice-President*, DR. J. B. GIBBS, Washington, D. C.

2d. *Vice-President*, DR. F. Y. CLARK, Savannah, Georgia.

Recording Secretary, DR. J. TAFT, Cincinnati, Ohio.

Corresponding Secretary, DR. W. MUIR ROGERS, Shelbyville, Ky.

On motion, the report was accepted, the gentlemen being duly elected by ballot.

Dr. Allport, the chairman, then introduced to the Association the President elect, who, upon taking the chair, made a few appropriate remarks.

A motion to reconsider the vote upon the adoption of the Constitution was received and adopted.

On motion of Dr. J. L. Suesserott, the first clause of Article V. on *Officers*, in the Constitution, was amended to read:

"The officers of the Association shall be a President, two Vice-Presidents, Corresponding Secretary, Recording Secretary, and Treasurer. Two or more nominees for each office shall be presented by a special committee of one from each delegation, and shall be voted for separately by ballot, a pleurality of votes being necessary for an election. Each officer shall hold his appointment for one year, or until another is elected to succeed him."

Adjourned to meet at four o'clock.

AFTERNOON SESSION.

On motion of Dr. J. F. Flagg, the thanks of the Association were tendered to Dr. W. W. Allport, as a testimonial of its appreciation of the able manner with which he discharged his duties as Chairman of the Association.

On motion, a committee, consisting of Drs. Cahoon, Allport, and Suesserott, was appointed to draft a code of By-Laws for the government of the Association, and report at a future session.

A communication was received and read by the Secretary, Dr. Taft, from Dr. A. M. Moore, a member of the Indiana State Dental Association.

Dr. Blake read a short paper upon the "Origin and Progress of the Western Dental Society." Both papers were ordered to be placed upon file.

Dr. W. Muir Rogers, of Shelbyville, Kentucky, offered the following:

Resolved, That this Association recommend to all dental practitioners throughout the Union, the propriety of urging all students under their tuition to prosecute a collegiate dental education; also, that we feel the importance and necessity of a higher standard of literary and scientific attainment by the students of dentistry.

A lengthy discussion ensued, participated in by Drs. Rogers, McQuillen, Flagg, Smith, Atkinson, Allport, Talbert, Clark, Fitch, and Taft. The resolution was adopted.

THIRD DAY—MORNING SESSION.

The minutes of the previous day were read and approved.

*Dr. J. Foster Flagg presented a paper upon *The Claims of Dentistry upon Dentists.*

*Dr. C. P. Fitch presented one upon *The Extraction of Teeth.*

*Dr. Geo. T. Barker presented one on *The Demands of the Age upon Dental Science.*

*Dr. J. Taft offered a paper upon *The Buccal Secretions of the Mouth.*

*Dr. McQuillen presented an oral synopsis of a paper upon *The Anatomy, Physiology, Pathology, and Remedial Treatment of the Fifth Pair of Nerves.*

On motion, the above papers were requested for publication. Copies being directed to be placed in the hands of the Committee of Publication.

The Committee on By-Laws reported the following:—

ARTICLE I.—OF THE PRESIDENT.

The President shall preside at all meetings, keep order, state and put questions, regulate debates, and sign all orders on the Treasurer duly passed by the Association. He shall not discuss any question while in the chair, unless it be a question of order. He shall have no vote, except where his vote may be necessary to decide a question upon a call of yeas and nays, or upon a ballot, except for officers.

ARTICLE II.—OF MEMBERS.

Each delegate, prior to being considered a member of the Association, shall sign the Constitution and pay the annual assessment.

ARTICLE III.—CONDUCT OF MEMBERS.

Any acts of special immorality or unprofessional conduct committed by a member of this Association, shall be referred to the Committee of

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* These papers will be found in another part of the DENTAL COSMOS.

Arrangements, whose duty it shall be to thoroughly examine into the case and report at the next meeting, if the charges be sustained. Whereupon, by vote, the offending member may be reprimanded or expelled: a two-third vote being required for expulsion, a plurality vote being sufficient for a reprimand.

ARTICE IV.—DEBATE.

No member shall be permitted to address the meeting more than twice upon the same subject, nor shall he consume more than fifteen minutes, unless by consent of the Association.

ARTICLE V.—AMENDMENTS AND ADDITIONS.

These By-Laws may be amended or added to by a vote of two-thirds of all the members present at any regular meeting.

(Signed) WM. CAHOON,
J. L. SUESSEROTT,
W. W. ALLPORT.

The report was accepted.

On motion, it was taken up by sections, and adopted.

The following resolution was then offered by Dr. J. W. Van Osten, of Philadelphia:—

Resolved, That a committee of three be appointed to confer with dental practitioners throughout the Union, with a view to the formation of local societies, and to report to this Association at its next stated meeting.

Adopted.

The Chair appointed Drs. Van Osten, Allport, and Rogers as that committee.

On motion of Dr. Allport, it was

Resolved, That the American Dental Association respectfully recommend to dental colleges the necessity of their being more stringent in requiring of matriculants a higher order of general literary and scientific education, and a rigid enforcement of their standard requirements for graduation.

Adjourned to meet at four o'clock.

AFTERNOON SESSION.

The Nominating Committee offered the following report for standing committees:—

Committee of Arrangements—Drs. Cahoon, Atkinson, and Fitch.

On Publication—Drs. Taft, Rogers, Dillingham, Van Osten, and Allport.

On Prize Essays—Drs. Hunt, Clark, Gildea, Rogers, and Suesserott.

On Dental Physiology—Drs. McQuillen, Barker, and McFarland.

On Dental Pathology and Surgery—Drs. Suesserott, Atkinson, Flagg, Hunt, and Allport.

On Dental Chemistry—Drs. Pease, Taft, and Van Osten.

On Mechanical Dentistry—Drs. S. B. Smith, Blake, Talbert, Dillingham, and Wadsworth.

On Dental Education—Drs. Rogers, Fitch, and Hunt.

On Dental Literature—Drs. Barker, Gibbs, and Taft.

The report was adopted.

On motion of Dr. Allport, it was unanimously

Resolved, To meet in the City of Cleveland, Ohio, on the last Tuesday in July, 1861, at twelve o'clock.

Dr. Atkinson, of Cleveland, in a few appropriate remarks, extended a cordial invitation for every member to be present at the meeting in Cleveland, and for all local associations to send full delegations, assuring them of a warm and hearty greeting from the dental practitioners of that city. He also introduced to the Association,

Dr. G. U. Brainard, Professor of Chemistry in the Cleveland College.

That gentleman cordially seconded the remarks of Dr. Atkinson, and also referred to the election of a Committee on Dental Chemistry, as the subject was one of vast importance, and, until recently, had been too much ignored by dental practitioners. He would have the dentist so thoroughly understand the chemical effect of food upon the dental tissues, that his influence would be exerted in behalf of a plain and simple diet—a diet that would be advantageous to the young, the middle-aged, and aged. He thought the three professions, viz., Law, Medicine, and Dentistry, flourished upon the vices or follies of mankind. The first upon the vices, the two latter upon the follies and excesses of man. It should, therefore, be a duty of dental science to teach what is a proper dietetic regimen for a perfect development of the dental organs, so that future ages may see the day that dental surgery is not needed, a wish that he might express of both the other professions.

On motion of Dr. Barker, the thanks of the Association were tendered to the Regents of the Smithsonian Institution for the use of their Hall during the session. Adopted unanimously.

On motion, adjourned.

It has seldom been our pleasure to attend a more truly pleasant *rêunion* of the dental profession than that given by the practitioners of Washington to the members of the American Dental Association, at the National Hotel, on Wednesday evening, August 2, 1860. We can only say, it was in every way worthy of the gentlemen of Washington City.

The profuse repast was presided over by Dr. Gibbs, of Washington, supported by the President (Dr. Atkinson) on the right, and the ex-President (Dr. Allport) and Dr. Maynard on the left.

We can only append a few of the toasts, and feel regret that the remarks of each gentleman cannot be fully reported.

A toast to the presiding officer was given, and was responded to by that gentleman.

One to the President of the American Dental Association; responded to by Dr. Atkinson in his *usual happy style.*

The Dental Profession of Washington City was given, and responded to by Dr. Gibbs.

Also the Prosperity of *Local* Dental Associations, and responded to by Dr. Taft.

The Dental Press was also given, and responded to by Dr. S. S. White, of the Dental Cosmos.

And so we might continue through the different voluntary toasts, that were responded to by Drs. McQuillen, Dillingham, Suesserott, Allport, McFarland, Flagg, Fitch, Rogers, and others, whose names we cannot now recall.

After a toast to the health of those worthy pioneers in dental science, Drs. Maynard and Chapin A. Harris, the company adjourned at a *somewhat* late hour, each gentleman feeling that the festive occasion had been one of unalloyed pleasure, and one long to be remembered.

AMERICAN DENTAL CONVENTION.

REPORTED BY GEO. T. BARKER, D. D. S.

The Convention met and was called to order on Tuesday, August 7th, 1860, at eleven o'clock, in the Metropolitan Hall, Saratoga Springs, New York.

Dr. L. W. Rogers, of Utica, in the Chair.

The Secretary being absent, Dr. S. M. Robinson, of Watertown, N. Y., was appointed Secretary *pro tem.*

The minutes were read and approved; the Treasurer's report was received.

The following gentlemen enrolled their names and residences, also paying the required assessment:—

Connecticut.—W. Potter, Norwich; R. G. Reynolds, Waterbury; Samuel Mallett, New Haven; Wm. H. Sheffield, New London.

District of Columbia.—Mahlon Loomis, Washington.

Florida.—P. P. Lewis, Tallahassee.

Georgia.—F. Y. Clark, W. Johnson, Savannah; H. B. Arnold, Thomasville.

Kentucky.—A. S. Talbert.

Louisiana.—D. Beatty, Ponchatoula.

Massachusetts.—Geo. L. Cooke, Milford; J. McGregory, Southbridge; F. Searle, C. S. Hurlbert, Springfield; S. J. Wetherbee, Boston; W. L. Bowdoin, Salem; S. G. Henry, Westborough; Thomas Palmer, Fitchburg.

New Hampshire.—P. A. Stackpole, Dover.

New Jersey.—L. G. Luman, G. F. J. Colburn, Newark.

New York.—W. B. Roberts, Geo. H. Perine, Frank H. Norton, W. H. Dwinell, John D. Chevalier, A. McIlroy, L. Coville, Geo. Clay, J. Smith Dodge, William Dalrymple, Chas. S. Miles, T. H. Burras, E. A. L. Roberts, H. Merriman, B. W. Franklin, C. C. Franklin, John Allen, J. S. Latimer, New York City; S. L. Smith, Clayville; H. Jamison, Jr., A C. Hawes, Lyons; A. Westcott, Jas. Chandler, Syracuse; D. Van Derburg, D. L. Goldey, Oswego; A. N. Priest, L. W. Rogers, Utica; M. W. Wilson, Saratoga Springs; T. E. Parkman, N. W. Shatluck, Troy; E. B. Palmer, Tully; Geo. E. Knox, Glens Falls; Jas. E. Duell, Amsterdam; Allen Clark, Poughkeepsie; J. P. Beardsley, Clinton; E. Beckwith, Westmoreland; D. Knower, Schoharie; J. H. Thurston, Fort Edward; John E. Savery, Cato; Wm. H. Klock, Little Falls; J. C. Hustin, J. A. Perkins, Albany; Wm. S. Lee, Sodus; C. F. Rich, Schuylerville; J. W. H. Tefft, Ticonderoga; P. Hogan, Waterford; E. F. Wilson, Rochester; S. D. Arnold, Balston Spa; B. S. Brown, R. G. Snow, B. T. Whitney, Buffalo; J. C. Gifford, Westfield; W. B. Hurd, W. C. Parks, Williamsburg; J. C. Munroe, Brooklyn; L. Gilman, St. Albany; M. B. Stenson, Prospect; S. M. Robinson, Watertown; L. W. Sutton, Long Island; Thos. D. Evans, New York Mills.

North Carolina.—R. Scott, Fayettesville.

Ohio.—Wm. A. Pease, Dayton; J. Taft, Cincinnati; W. H. Atkinson, Cleveland.

Pennsylvania.—J. R. McCurdy, H. Merritt Asay, J. Lambert Asay, T. L. Buckingham, S. S. White, Philadelphia; C. B. McDonell, Conneautville.

South Carolina.—B. A. Rodrigues, Charleston.

Tennessee.—E. D. Wheeler, Murfreesborough; C. F. Munter, Jackson; W. H. Morgan, Nashville.

Vermont.—A. P. Hall, E. V. N. Harwood, Rutland; M. Tefft, Poultney; H. Kingsley, Middlebury; L. D. Cox, Pittsfield; D. W. Prime, Brandon.

Virginia.—James Johnston, Staunton.

France.—C. S. Putnam, Paris.

England.—Isaac Sheffield, London; E. Gidney, Manchester.

The President stated the next order of business to be the election of officers. Upon separate ballot the following were elected for the ensuing year: President, Dr. T. L. Buckingham, Philadelphia, Pennsylvania; Vice-President, Dr. B. A. Rodrigues, Charleston, South Carolina; Recording Secretary, Dr. B. W. Franklin, New York City; Corresponding Secretary, Dr. J. B. Wetherbee, Boston, Massachusetts; Treasurer, Dr. A. N. Priest, Utica, New York.

The President appointed the following gentlemen to constitute the Executive Committee: Dr. F. Y. Clark, Savannah, Georgia; Dr. F.

Searle, Springfield, Massachusetts; Dr. B. T. Whitney, Buffalo, New York; Dr. E. D. Wheeler, Murfreesborough, Tennessee; Dr. W. A. Pease, Dayton, Ohio.

The retiring President then addressed the Convention in the following language:

"GENTLEMEN OF THE CONVENTION:—The next thing in the order of business, as arranged by your Committee, is an address by the retiring President. I should have been well pleased if your Committee had also given me a subject. As it is, there is no particular question before the house, and we will, if you please, consider ourselves in a 'Committee of the Whole, on the state of the ——' *profession.*

"When we look at dentistry as it is, and compare it with what it was a few years ago, we are astonished at the progress that has been made, and there is probably no art or science in which there has been such a great advancement in the same length of time. And this change is seen not only in what has been attained in the principles and practice of the profession, but also in the character and standing of its members.

"It is but a short time since dentistry was thought to require no higher talent or skill than that of a village barber or blacksmith; but it has now risen to the dignity of a respectable profession, which, to be successfully followed, demands long study and thorough training, with an amount of scientific knowledge and practical skill equal to that of any other profession. It must be confessed, however; that many who 'profess and call themselves' *dentists* are sadly deficient in the qualities and qualifications mentioned. We have able writers, learned professors, and skillful operators, with, perhaps, a fair proportion of members of respectable talents and attainments; but there is still among us a large class of mere *tooth-tinkers*, who are scarcely worthy to rank with the barbers and blacksmiths of former days. It is true, that quacks and pretenders are common to all professions and avocations, but they are more degrading to dentistry, because the public have no certain means of distinguishing between the worthy and the unworthy. The swarms of charlatans that hang around other professions are known to be outsiders, with no title to stand among *regular* practitioners, but any man may open an office and call himself a dentist. No diploma, license, or certificate is necessary to make him just as regular as the best. There is among us no recognized authority to declare who are and who are not qualified to practice, nor have we any certain rule by which that qualification can be determined. Were we to require a regular course of study, it would exclude many of our best dentists, who commenced practice when there was no adequate means of obtaining a dental education. In thus attempting to pull up the tares, we should pull up the wheat also. This is a state of things incidental to a new profession. The demand for dental service in this country opened a wide and almost unexplored field of investigation, which, with its promised emoluments, attracted great numbers into the practice. Among these were many ingenious, inquisitive men, who, untrammeled by precedents and unawed by authority, pursued their experiments with a freedom and boldness, not always indeed to the advantage of their patients, but resulting on the whole in valuable improvements and discoveries. These, and such as these, have contributed much to make dentistry what it now is; but they have been succeeded by a horde of impostors who are a disgrace to the profession.

Is there no way of cutting them off? Must we always submit to such associations? I would not be arrogant or exclusive. It may be desirable, it is certainly inevitable, that there should be a wide difference in the standing and attainments of dentists. I would recognize the humblest degree of skill that can be honestly useful among any class of people. But to be obliged to stand among impudent knaves and charlatans, with nothing to distinguish us from them, is too humiliating to be endured.

"It is a legal maxim, *that where there is a wrong there is a remedy.* Perhaps, in this case it is difficult to find the remedy, or to apply it when found. Our condition is anomalous. We are standing on the body we wish to move.

"Well, gentlemen, I have nothing new to recommend. The only remedy for the evil which occurs to me, has been often proposed. It was particularly insisted upon in a letter to the New York State Dental Association, written by Dr. Westcott, last September. It is in substance this:—

"That a number of our most prominent dentists in this State (and the same may be done in other States) should obtain a charter from the Legislature for a Dental Institute, with power to hold property, establish a library, provide lectures, etc., and grant diplomas to such persons as, after due examination, should be found qualified to practice.

"This plan may not be without objections, but it seems to be the only one that is now practicable; and I am sure it could be carried into effect if the leading members of the profession would give it their support. But precisely here is the difficulty. Many of our most eminent dentists persistently stand aloof from all organizations for fear of being associated with the class of persons of whom I have spoken.

"This is wrong. It is selfish. It is in their power, and it is their duty to do something to purify and elevate the profession to which they belong. In refusing to do this, they illustrate the virtue of those politicians who profess to aim at 'the greatest good of the greatest number,' but with whom the greatest number is always *number one.* Let these men step down from their lofty pedestals and lend a helping hand to their laboring brethren, and they will soon find themselves belonging to a profession of which they will have no cause to be ashamed.

"As I promised to be short, I will not now pursue this subject further. Much has been said of late about "the elevation of our profession," and I have suggested one of the readiest means of doing something toward that end. But, after all, we must not expect too much from this or any other organized effort. I said the evils of which we complain are incidental to a new profession. We must be patient and wait for the operation of causes that will slowly but surely bring about a change.

"Some have looked to this Convention to be the great winnowing machine that should separate the chaff from the wheat; but it never had any such purpose or design. If there was any great danger of our being overrun by unworthy persons, we could adopt some restrictions for our own protection, but we have so far had no cause to complain.

"Permit me to say, in closing, that in reference to the elevation of our profession there has, in my judgment, been too much of boasting and self-glorification among us. Some have been too forward in *pressing* the claims of dentistry rather than *waiting* for them to be recognized by the community. No person or profession ever attained a permanent standing by talking big or putting on airs. The best way to secure respect is to deserve it, and the surest way of elevating our profession is for us individually to elevate ourselves.

"It only remains for me to thank you, gentlemen, for repeated expressions of your confidence and esteem, and to assure you that after serving in office for three successive years, I now retire with unabated interest in the objects of this Convention."

The Chairman appointed Drs. Dwinell, of New York, and Allport, of Chicago, a committee to conduct the President elect to the chair.

Dr. T. L. Buckingham, upon taking the Chair, cordially thanked the Convention for the honor conferred upon him, and in appropriate language referred to the worthy and distinguished gentlemen who had in turn presided over the American Dental Convention, and regretted that the few moments intervening between his election and inauguration precluded the possibility of the presentation of a fitting address. He would, therefore, trusting to their hearty co-operation, proceed to the duties of his office. His remarks were warmly applauded.

On motion of Dr. Perine, a vote of thanks was tendered to Dr. Rogers, the ex-President, for the able and impartial manner with which he had presided over the Convention. Adopted unanimously.

A vote of thanks was also tendered to the other retiring officers.

The Convention adopted the following hours for meeting and adjournment: Morning session, from *nine* to *one* o'clock. Afternoon, from *four* to *seven* o'clock.

Adjourned to meet at four o'clock.

AFTERNOON SESSION.

The President stated the next order of business to be the consideration of *Artificial Dentures*, that being the first subject for discussion.

Dr. B. W. Franklin, presented a paper upon Mechanical Dentistry. He referred to the advantages of this particular branch of our art, considering it in every sense a blessing to humanity, and thought the name did not sufficiently explain its true merits. He considered too many had entered upon this branch because they were good artisans, silversmiths perhaps, or merely *workmen*, ignoring all truly scientific attainments and knowledge; but thought it a truth that this branch claimed as high if not a higher order of acquaintance with Anatomy and Physiology, as any other of the profession, and while certain rules of guidance can be established in the operative, in the mechanical department no rules can be laid down. The successful practitioner must be guided by the physiognomy, constitution, and hereditary traits of his patients, each one calling for a different method of practice. He considered there were more failures in this branch than in any other of the dental art. Dr. Franklin concluded with a reference to the claims and merits of Dr. Allen's continuous gum work and the vulcanite base, stating the objections and advantages of these kinds of work.

Dr. John Allen presented a paper upon "Artificial Dentures," advising the following rule: first, to *begin right;* second, *to keep right;* and then you would be sure to *come out right.* The many causes of failure he thought due to improper manipulation in the beginning. It is in this branch the height of art to conceal art, and he who succeeds must be truly an artist, not merely an artisan working by handicraft, but requiring the highest order of ideal talent and good scientific qualifications. He must also judge correctly of position, color, and adaptation of his denture. To accomplish good results, he must have an acquaintance with metallurgy and mineralogy, that he may properly combine the different minerals to form perfect bases for artificial dentures; he must also be a highly accomplished gentleman; in short, he must be a sort of *compound man.* He thought good practitioners ignored too much this important branch of the dental art.

Dr. F. Y. Clark, upon the invitation of several gentlemen, referred to a method for obtaining metallic dies without the use of casting sand, a full description of which will be found in the June number of the DENTAL COSMOS for 1860. His remarks were illustrated by models.

Dr. Franklin referred to the material used by Dr. Clark for taking impressions, viz., three parts of felz spar to one of plaster, but did not believe the expansion would be materially altered by the use of such a material. To prevent the expansion of plaster, is in the habit of taking a wax impression, cutting away certain portions, and pouring upon this a small quantity of plaster, and is thus enabled to take a thin impression in plaster which changes but little; this is also an excellent way of taking impressions in deep mouths.

Dr. Burras presented a short paper, which we give entire, illustrating his remarks with appropriate models.

"A NEW METHOD OF OBTAINING A METALLIC MODEL FROM THE PLASTER IMPRESSION OF THE MOUTH.

"After having procured a correct impression of the mouth in plaster, the outer alveolar edge and the posterior portion of this impression should be cut down so far and in such a manner as the dental base is desired to extend, being particular to allow for muscular and ligamentous attachments; at the same time, if requisite, cut an atmospheric chamber in the palatal arched portion of the impression. Then saturate, with shellac varnish, or melted wax, all parts of the plaster, except that part of the impression it is desired to transfer to the deposit of metal, which part must be uniformly covered with fine plumbago, or any of the metallic bronzes. After the plaster impression has been prepared in accordance with this process, the operation of obtaining the model is simply this: A water-tight wooden, earthen, or other vessel, (*non-metallic,*) say a common water pail, is divided into two compartments, so as to allow no communication of liquid from one apartment to the other, let each division be nearly filled with water, and to each quart of water in one of them turn a drachm of *sulphuric acid* (*oil of vitriol.*) Into the water of the other division add as much *sulphate of copper* (*blue vitriol*) as it will hold in solution, *i.e.* a quarter of a pound to the quart. Now, having your vessel, liquids, and impression ready, take a piece of stout copper wire and bend it for a conductor, so that it may hang over the partition and extend down into the liquids on either side. To one end of this conductor attach a plate of zinc to be inserted in the acid, and to the other end affix the impression so that the copper wire will come in immediate contact with some portion of the surface coated by the plumbago, bronze, or whatever metallic surface may have been rubbed over the impression. By hanging this conductor across the partition, with the end to which the zinc is attached immersed in the acid, and the impression in the opposite side containing the solution of copper, you will have a most capital galvanic battery, the action of which will separate and precipitate the copper contained in the solution and cause it to form a beautiful copper surface on the face of the impression. In the course of ten or twelve hours this coating of copper will be of sufficient thickness to form the face of a perfect model in pure metallic copper, and an exact *fac-simile* of the mouth from the impression, forming a disk of copper in which can be poured or run fusible metal, britannia, or any of the metals used as models for dental purposes, giving it the requisite thickness, shape, etc., for swagging or hammering when used with the counter model or female cast.

"I have found this an excellent method for obtaining a most correct and perfect model of such impressions as are very uneven, having undercut or projecting alveolar ridges where it is almost impossible to obtain a correct metallic model by the ordinary process."

Dr. A. Westcott referred to a style of forceps which he invented many years ago, and took the trouble to travel to the City of Washington to present to the notice of his friend Dr. Maynard, of that city. Upon examination, he said he considered them a valuable invention—but, to the surprise of Dr. Westcott, opened his case and produced a similar pair; he said, however, that it did not detract from the originality, as the invention was original with both. He would say, that he had used a method for obtaining metallic dies similar to the one proposed by Dr. Burras, many years ago.

Dr. Burras remarked, he had stated his mode of practice to many of the most prominent mechanical dentists in this country, all of whom said it was a *new thing;* and he thought Dr. Westcott should at least be censured for retaining so valuable a secret so many years.

Dr. Wm. B. Roberts spoke of the objection to the use of a copper face die, it being as soft as lead.

Dr. Westcott stated that he had not used that method in practice, the process of electrotyping being so exceedingly slow, taking twenty-four hours to get a thin copper plate.

Dr. Burras remarked, the copper precipitated is perfectly pure, and though electrotyping is nothing new, yet the patentee of the copper-faced type has accumulated an independent fortune. That, however, is precipitated upon a metallic type, while his is made upon the plaster impression.

That the copper is hard enough to resist any moderate force, must be plain to those who have ever used copper chambers in swedging plates. It is not necessary to use the muriate of tin to prevent the plates adhering to the impression.

Dr. Sutton remarked, if gentlemen would test Dr. Clark's method they would find it of great advantage; he had been in the habit of using a process somewhat similar for the last nine years. He takes an impression of plaster mixed with silex, in the same manner as that gentleman; after drying the impression, drills a number of holes into it opening on to the alveolar ridge and palatine arch, closes these holes with moulding sand, and pours zinc into the impression; the moisture of the impression will be drawn off through the holes filled with sand, thus procuring a perfect male die; the female die is obtained in the usual manner with lead.

Dr. Wetherbee spoke of the advantage of Dr. Clark's method of obtaining dies as a very simple and valuable process.

Dr. Atkinson desired to present a few remarks upon preparing the mouth for artificial dentures. He was taught to persuade patients to wait six or eight months before inserting a temporary set; he had, however, discarded that practice, and now waited only until the blood ceased to flow before taking an impression. If the gum is soft, cuts it away considerably, and with incising forceps removes the alveolar process sufficiently to make an even denture; takes an impression and arranges the artificial teeth in the places from which the teeth have been extracted. Has known such sets to last from six to seven years. The teeth should be extracted with the least possible violence, and the patient should be in a healthy condition. Absorption of the alveolar process will continue occasionally for many years, and is acquainted with a gentleman in Cleveland who has had seven sets perfectly fitted to the mouth, none of them answering but a short time.

Dr. Rodrigues sometimes inserts a partial artificial denture in the following manner: Takes an impression of the mouth before the teeth are extracted, removes the teeth from the model and fits the plate to the mouth, then extracts the teeth, placing the artificial ones in the sockets from which the others were removed.

Dr. Roberts advocated and had used the method suggested by the above-named gentlemen. He thought the teeth inserted immediately after extraction gave far less pain than when left to a later period, the soft parts being protected by the plates.

Dr. Wetherbee has seen many temporary cases inserted too soon after extraction, and might say so of three-fourths of all the temporary sets. After wearing atmospheric plates for a year they cease to fit, but the arch is rough and unfit for permanent work; he removes such points of the alveolar process in rough arches with cutting forceps, and the gum with scissors; usually waits three months, if possible, after extraction, before inserting temporary sets; reduces the arch on the plaster casts, thus making a plate really smaller than the arch; this cannot be retained by atmospheric pressure, but is secured by means of clasps or springs upon the under teeth; after a time the plate will fit perfectly, and has known such cases to remain unchanged after ten years' wear; he thought the result better than building upon a foundation that would be constantly changing.

Adjourned to meet at nine o'clock on Wednesday morning.

SECOND DAY—MORNING SESSION.

The minutes of previous meeting were read and adopted.

The subject of Artificial Dentures was continued.

Dr. John Allen remarked that he always removed the teeth before taking an impression; usually inserts a temporary set immediately after the teeth have been extracted, and never waits longer than one or two weeks; if there are any projections of the arch, lances the gum at that point, and with another instrument breaks away the projections of bone; thought absorption would progress the same under the plate as when no teeth were inserted, and that this change would continue from nine to six months. He does not allow the plate to extend over the anterior portion of the alveolar process. The advantages of immediate insertion are that the regular form of the mouth is preserved, and no change will take place in the muscular tissue. If a long time is allowed to elapse between the insertion and extraction of the teeth, there will be an alteration in the position of the condyles and the angles of the jaw; besides a change in the natural expression of the face, which it is always important to retain. Another reason for immediate insertion is, that the patient will acquire the use of artificial teeth with facility, and that the surrounding parts, viz., the cheeks, tongue, and secretions of the mouth, will assist in the different movements.

Dr. Whitney extracts the teeth with great care, and inserts temporary sets immediately, the same day if possible, never waiting longer than two days. The projecting points he carefully removes. A temporary set will often last, when thus inserted, for years; considers we deceive our patients when we tell them we can insert a permanent set; by this they understand they will obtain a denture that will last for years, and possibly for life. It is well known that the process of absorption continues through life, and therefore we can never claim to insert a permanent set; related a case where a gentleman had been obliged to procure a set every year or two, the absorption continuing until the alveolar process is almost entirely absorbed; he would have us forget the word permanent in the insertion of artificial dentures.

Dr. Coville spoke of the offensive smell of the vulcanite base when placed in the mouth; also objected to the presence of sulphur in the material, and considered its effects would be deleterious to the patient. The porosity of this material was also an objection. He has found nothing equal to good gold work for permanent or temporary work. In inserting temporary sets, avoids the use of atmospheric plates, and would not use them in one case in a hundred. Sets when inserted will adhere longer without an air chamber than with one.

Dr. Hurd did not object to sulphur in the vulcanite material, and considered the smell would not be perceptible if properly prepared. He considered that all the different kinds of work had their advantages in special cases; if we were half as faithful to our patients as the materials are to us, we would obtain a higher degree of perfection. He inserts a temporary set as soon as possible, carefully extracting the natural teeth; he never cuts away any portion of the gum or alveolar process, believing that nature can perfectly accomplish the work of absorption, and that we cannot improve upon her method; the pressure of the plate should be directly upon the projecting points. He also referred, in appropriate language, to the responsibilities and trials of the dental profession.

Dr. Goldey referred to the advantages of the vulcanite base.

Dr. Wetherbee thought that Dr. Allen's method was the best to be followed, provided the plan suggested by him during yesterday's session was not adopted; he thought we might say a permanent set could be introduced; if his plan was tried the result could be accomplished, and thought it only sufficient for the profession to try this method to become aware of its benefits.

The President alluded to a custom which had been introduced in the former meetings of the Convention, requiring members to speak of their own practice without referring to or objecting to other modes.

Dr. Asay offered a few remarks upon this subject.

Dr. Franklin spoke of the presence of sulphur in the vulcanite material, and that a strict chemical analysis would not detect its presence, such tests having been repeatedly made; he had seen a case that had been used for five years, and answered the purpose perfectly of an artificial denture in every particular; considered it invaluable, but nevertheless thought other bases had their advantages. It was very important to properly manipulate the vulcanite material.

Dr. Roberts spoke of what had been claimed for the vulcanite material; the color of the hard rubber was produced by the oxide of mercury, which must affect the system unpleasantly; it should be an object with all to introduce the purest material; he claimed that the continuous gum work had such advantages as could be claimed by no other material; the color of the vulcanite base is changed by repeated heating in mending.

Dr. Taft inserts temporary sets immediately after extraction, never allowing more than a week to pass; considers the term *temporary sets* a good one, and that both patient and operator would perfectly understand its meaning; finds nothing better than continuous gum work for such sets. He allows the plate to extend only to the necks of the teeth, and with the body fills up any depressions. If teeth are not inserted immediately, a lateral movement of the jaw will be induced, which will take much time and patience to overcome; there will also be a change in the cheeks and muscular tissue, and particularly in the natural expression of the face, which is important, under all circumstances, to retain. The facility of use and language is also readily obtained, a difficulty which can rarely be overcome if no teeth have been present in the mouth for a length of time. When the process is absorbed, he fills the spaces between the temporary set and arch with continuous gum, subjecting them to this addition of material from time to time as absorption progresses; his objection to vulcanite in such cases was, that the material, in consequence of its color, could not be placed in the anterior portion of the arch.

Dr. Atkinson remarked that he was requested to present to the notice of the Convention an invention by Dr. C. Palmer. Upon carving a set of teeth he separates the gums (after biscuiting) over the bicuspids and molars, and by this means avoids the usual shrinkage.

Dr. Clark mentioned the case of a gentleman for whom several upper sets had been made, one by himself, all being useless, as no adherence of the plate could be obtained; on a second trial he broke the plate posterior to the air chamber, and, without knowing it, introduced it in his mouth; the adherence was perfect; upon an examination of the mouth, found the muscles of the palatine arch were so strong as to throw the plate downward, when he attempted to exhaust the air; after mending the plate, perforated it with three small holes a short distance back of the air chamber, and the adhesion was perfect, as he exhausted the air through these holes.

Dr. Colburn spoke of the advantages of continuous gum work; has no trouble in repairing it, and meets with the greatest success in its use.

Dr. Merriman does not allow plates to extend very far back, and uses very small air chambers.

Dr. Goldey spoke of soldering continuous gum work, and referred to the method (suggested by Dr. Clark, of New Orleans,) by means of solder composed of arsenic and platina; this mode had been discarded in consequence of its destroying the plate and staining the gum, pure gold having been substituted. He uses this solder with success, in the following manner: Puts the teeth in a rim in the usual way, and protects the plate and the gum by covering them with a very thin coating of silex; uses a small quantity of solder, which he can cause to flow with the ordinary heat of the blow-pipe, while gold requires the heat of the furnace.

Dr. Searle advocated the old plan of sets upon gold, with block or gum teeth, and thought that constant changing was not of advantage, and believed if the old method was now introduced as a new invention it would be universally adopted; we should aim to be perfect in one kind of work at least.

Dr. Allen spoke of the solder referred to by Dr. Goldey, and objected to its use because of its porosity, and that it made the plate too brittle. Pure gold, with one-twentieth part of platina, made a better solder than pure gold; it requires rather a high heat, but thought this no objection.

Dr. Clark, of Poughkeepsie, of late years inserts temporary dentures after the teeth have been extracted about two months; makes the plate very thin; thought one style of work would not do for all cases, and considered our practice should be somewhat *eclectic.*

Dr. Clay has found the best practice to be trimming the gums and filling the sockets of the teeth in the model, before striking up the plate; thought absorption would continue about two years. He uses continuous gum-work, but does not solder the teeth. Uses those having a groove in them, into which he runs a piece of gold wire, which he solders to the posterior portions of the plate upon each side—solders each of the pins in the teeth to the wire, perforates the plate, filling the space around the teeth and in the plate with the continuous gum material; uses nothing but plaster and sand as an investment.

Dr. Westcott inserts temporary sets immediately after extraction; the objection to them, is that you commence on a rough arch; the effect of pressure is that this sharpness continues as absorption progresses; he fills the spaces between the arch and plate with gutta-percha or Hill's stopping, building on from time to time until the inequalities are entirely absorbed; has used chamois skin in the flabby gums of the inferior arch, and succeeds admirably, it being even better than gutta-percha.

Dr. Rogers spoke of the advantages of temporary sets, and referred to cases where no teeth had been worn for a long time, and upon inserting them absorption had commenced.

Dr. Westcott alluded to specimens in his possession, where a deposition of bony material would be found entirely filling the sockets of teeth that had been extracted; referred to the reparative process in cases of fracture of the bones, and stated that such new depositions in cases of scurvy or other like diseases, would be the first to be absorbed.

Dr. Rogers spoke of the difficulties attending immediate insertion of temporary sets, but thought them far less than where none were inserted.

President Buckingham said that the most *permanent set* of teeth he had ever known of, was one that was used *in turn by three members* of a family, as they *died off.*

The next subject of discussion was then taken up, being "The Structure and Nutrition of the Teeth."

Dr. Taft remarked that with the anatomical structure he presumed all were acquainted; but thought there was a difference of opinion with regard to their nutrition, as many did not believe there was a circulation in the dental tissues as in other osseous structures. It is true, that the red corpuscles do not permeate the dentinal tubuli as in other bones, but believes there is a circulation; infers this from the formation of the dentine, its vitality, presence of nerve fibres, and the ease with which fluids pass into it. No vessels have as yet been traced into the dentine, but that does not prove that they do not exist; considered the nutrition of the tooth to be derived from the pulp internally, and periosteum externally; if the former is destroyed, all sensation in the crown will be removed, but the fang will retain its vitality, because of the circulation derived from the latter—were it not so, nature would dispose of it in the same manner as foreign substances in other soft parts.

Dr. Atkinson remarked, the theoretical must ever precede the practical. In the formation of all living tissues we first recognize *plasma;* second, *cells;* third, *organs;* and fourth, *systems.* He said to strictly define the *structure* of a perfected tooth, beginning at the periphery, we first divide a stratum of cementum, and successively one each of enamel, dentine, and pulp, to complete the survey or section. Here the law of integration has completed its function to the full degree of development for tissues properly denominated "*primary.*" Considered there were two modifications of developmental law in tooth structures—one in ossification, or more properly calcification of the pulp, which would not be endowed with the life-principle to the full measure of the primary dentine; the other was in true hypertrophy of cementum, which is furnished with the full, if not a *plus* degree of life-principle. He would liken enamel, from its crystalline structure, to the mineral; the dentine, from its mode of circulation and nutrition, to the vegetable; and the pulp, to the animal kingdom. All nutrition takes place without cells or organs in plasma (inclosed within pellicles), and in teeth we are presented with the synonyms of both vegetable and animal nutrition: the dentine proper resembling the nutrition of endogens; the cementum, that of exogens; and the pulp, the animal or soft tissues.

Feeding properly belongs to cell, organ, and system; and that the organs and cells constituting our systems may be fed, a pabulum must first be brought into the system, and *there prepared* for the purposes of nutrition, which always takes place in cells first, and thus, by developing organs by aggregations of these cells, growth and nutrition are effected. So that feeding, in the strictest sense, belongs to that little-understood part of our being, its basal and elemental existence. But in the sense of supply to the system, feeding takes place in mouths in which TEETH are the principal means of division and comminution. Then, that we may be *well* fed, it becomes necessary for *these* to be in sound and regular condition; to secure which is the object of all our investigation.

In regard to dental hygiene, Dr. Wescott says: "Keep the teeth and the whole oral cavity clean." This is but a special enunciation of the general truism that "cleanliness is next to godliness," which I most heartily indorse, and wish that every dentist would appreciate its full significance and enforce its practical necessity; for just so far as we obey its precepts will we be exempt from the miseries of neglected organs and systems, and revel in the delights of health, purity, and truth.

Dr. Dodge took exception to the term used by Dr. Atkinson, viz., the *crystalline structure of enamel;* remarked that crystals are the marvels of the organized world: there is nothing like them in the enamel, for when cut transversely and placed under the microscope there will be rarely found a true *pentagon.* Longitudinally, these tubes will be found twisted and interlaced in different shapes, and very irregular, possessing none of the attributes of crystals, each column being contained in an animal sheath. He referred to the circulation in dentine, and thought it similar to that of cartilage, viz., absorption from a vascular tissue of the plastic portion of the blood without the presence of blood corpuscles, except in rare instances.

Dr. Westcott remarked that, when a student, he adopted the circulatory theory; but now considers the enamel to be a crystalline body devoid of circulation, and the dentine to be so far divested of circulation as to be unapparent, but believes it has vessels permeating its structure, but with such a limited degree of vitality as to be unable to resist chemical affinity; referred to the vitality possessed by other structures and their power of resisting chemical agents; remarked that the gastric juice would dissolve the stomach were it not for this power.

Adjourned to meet at four o'clock.

AFTERNOON SESSION.

The discussion of Structure and Nutrition of the Teeth was continued.

Dr. J. Allen spoke of the constituents of the teeth, and advocated the use of certain kinds of food containing large proportions of earthy phosphates; referred to our food being deprived of these constituents by the present mode of preparing grain; thought children needed no meat before four, and but little previous to twelve years of age. Their food should be confined to bread, milk, and such other light articles of diet.

Dr. Taft referred to the importance of food for children, as their teeth required the same materials for nutrition as the other osseous structures; alluded to the necessity of the mother being able to furnish proper nourishment containing a due quantity of the phosphates and carbonates, and thought her food should be selected with discrimination. He spoke of the administration of phosphates constitutionally, and had seen instances where it was beneficial. Had known cases of difficult dentition relieved by their use. He referred to the case of a mother whose teeth were poor, and whose three children passed through the stage of dentition with great difficulty, the teeth of all being miserable; upon again becoming *enceinte,* proper food was selected and the phosphates administered, which produced the happiest results upon the general constitution and osseous structure of her child, as he passed through the period of dentition with ease, possessing an excellent dental organism.

Dr. Searle said that we seldom had the control of patients, and could not administer constitutional remedies and direct the proper food; he therefore thought the treatment advocated by Dr. Taft impracticable.

Dr. John Allen thought much good could be done if each practitioner would publish a small volume upon that and kindred subjects, for presentation to their patients; he had adopted such a plan in his own practice, and thought much good had been accomplished.

Dr. Buckingham said it was impossible at a convention of this kind for any one to explain fully his view of the structure and nutrition of the teeth, as it required him to explain in ten minutes, what, to do properly, would take as many hours. He would say that there was one principle that was usually overlooked, viz., the *vital force;* we sometimes spoke, as if it was only necessary to administer a certain amount of the phosphates, and they would be taken up and appropriated to building the osseous structure, just as certainly as though it were a mere mechanical process and vitality had nothing to do with it. Simple substances will, when brought together under proper circumstances, unite in different proportions, and form certain compounds which are invariably similar; but when food is taken into the stomach, it does not always nourish the body; for instance, two children may be at the same table partaking of the same food, one healthy and the other sickly; in the latter the power of assimilation is weak, and the other strong. He considered dentine received nutrition in the same manner as the other tissues of the body; that all nutrition was *extra vascular,* and the red globules of the blood did not go to nourish the tissues, but were merely carriers of nutrition. Thought it was a mistaken idea that teeth that had been well formed always remained so, but believed they would suffer from a diseased condition of the system as the other tissues of the body; vitality in the teeth gave them the power of resisting decay, which dead teeth did not possess; he did not consider the structure of dentine to be crystalline, as such formations were not to be found in the animal or vegetable kingdoms.

Dr. Westcott thought that the enamel possessing one and a half per cent. of animal matter could not resist chemical affinity, and thought that living teeth would be affected by chemical agents just as readily as dead ones; referred to persons suffering from *mollities ossium* where no change would be found in the teeth; would ask Dr. Buckingham if he thought the teeth were sick when the patient was?

Dr. Buckingham replied that it was his opinion that teeth suffered from disease of the system, as other parts of the body, though it might not be apparent if they were perfectly sound. He might take as an instance a man suffering from a sore on the hand; if the system became diseased, the inflammatory action in the hand would be greatly increased, as it was a law that where there was any disarrangement of the system, there would be the greatest inflammation.

Dr. Stackpole alluded to the probability of a change in the constitution of the patient referred to by Dr. Taft; thought it due rather to that, than to the administration of phosphates; spoke of hereditary traits transmitted from parent to child, and thought a dead tooth would be more readily acted upon by decomposing agents than a living one.

Dr. Perine presented and advocated the following resolutions:—

WHEREAS, the members of the medical profession in Great Britain and America are taking measures to erect a monument to the memory of the lamented and revered John Hunter, and as the dental profession owes, in a great measure, its present position, standing, and knowledge of the science of dentistry to the labors of John Hunter—

Resolved, That the American Dental Convention, assembled at their annual meeting in Saratoga, this 8th day of August, 1860, do hereby express their approval of the intentions of the brethren of the medical profession, and do recommend to the members of the Convention, and the profession throughout the United States, the offer of such pecuniary aid as may be in their power for the advancement of this object.

Resolved, That a committee of three be appointed by the Convention to communicate with the committee of the medical profession in Boston, in relation to this subject, with power to make such provision as they may deem necessary in the premises, and receive the subscription of this Convention and other members of the profession, for transmission to the medical committee.

On motion of Dr. W. B. Roberts, the resolution was tabled.

It was then resolved to select the next place of annual meeting for this Convention. Several places were named, and it was finally *resolved* to meet in the City of New Haven, on the first Tuesday in August, 1861, at ten o'clock.

Adjourned to meet at nine o'clock.

THIRD DAY—MORNING SESSION.

The next subject of discussion was then taken up, being "Irregularities: their Causes and Treatment."

Dr. Taft referred to the importance of the subject, and thought the failure on the part of nature in removing the temporary teeth, and the imperfect development and eruption of the permanent, were frequent causes of irregularity. The latter are frequently developed abnormally large; while the arch is too contracted to receive them, the only treatment would be to remove some of the teeth or expand the arch; preferred to extract one of the bicuspids or first molar in such cases. He also spoke of the different methods of correcting irregularities, and the various appliances which had been at different times suggested.

Dr. Searle stated a case, and gave his mode of treatment, desiring to know the opinion of members upon this method.

Dr. Allen has ceased to use metals for inclined planes, and substitutes rubber bands.

Dr. W. B. Roberts thought no time could be given for the completion of an operation for correcting irregularities, as it must depend upon various circumstances known only to the operator; considered we had more irregularity in this country than in any other, and a comparison of the jaws of different nations would prove ours the smaller—the jaw of the German would be found one-fourth larger than that of the American—as a consequence, the permanent teeth would be crowded, and irregularity ensue.

Dr. Perine exhibited an interesting model of irregularity, presented by Dr. Gifford of Westfield.

Dr. Clark alluded to a case he had under treatment, of a patient twelve years of age, the incisors diverging almost on a line with the nose, elevating the upper lip; the bicuspids and molars were thrown out of position so that bands could not be fitted upon them.

Dr. Coville said, irregularities were frequently traceable to hereditary causes, and thought they were often due to premature removal of the deciduous teeth resulting in a contraction of the arch. Irregularity also requires time for correction in order that it may be permament; spoke of several interesting cases.

Dr. Asay has no system for correcting irregularities, but is governed by circumstances.

Dr. Goldey spoke of the time necessary to accomplish permament regularity; uses the inclined plane upon the anterior teeth with good success; usually succeeds in three or four days. To avoid periostitis, directs the patient to wash the mouth with tincture of myrrh.

Dr. Colburn had practiced in the Sandwich Islands, where irregularity of the teeth was unknown, and the same could be said of the natives of California and South America.

Drs. Whitney, Talbert, Evans, and Morgan also discussed this subject.

On motion, the subject of "Diseased Dentine" was taken up.

Dr. Colburn had never met with a patient in the Sandwich Islands suffering from diseased dentine, with the exception of those who had intermarried with the whites and lived on American food; thought our wheat flour, as prepared for the table, contained so small a portion of earthy phosphates that the teeth did not receive proper nutrition, and would eventually become carious. In answer to a question, stated that the natives of South America ate corn bread containing a large quantity of phosphate of lime.

Dr. Dodge thought, while discussing the causes of diseased dentine, other things beside diet should be considered; habits, amount of sleep, and other customs have their influence; the teeth also sympathize with the stomach in its derangements, and thought dyspepsia would cause sensitive dentine; it is also due to a nervous sensibility in the bony portion of the tooth. He thought caries was caused by the dissolution of the bony constituents, and the destruction of the animal portions of the teeth by outward agents entirely.

Dr. Rogers referred to the galvanic action of different metallic substances upon the teeth; has used gutta-percha under fillings where the pulp was nearly exposed, and with good results.

Dr. Morgan presented a method of treating exposed pulp, and inducing a bony deposition with which he was very successful.

Drs. Clark, Priest, and Roberts also spoke upon this subject.

Dr. Rogers offered the following resolutions:—

Resolved, That this Convention has heard with profound sorrow of the death of Dr. Alvin Blakesley, of Utica.

Resolved, That in the death of Dr. Blakesley the profession has lost one of its oldest, most enthusiastic, skillful, and honored members; one with whom it was ever our delight to meet and take counsel, and who was endowed with so many of the best qualities of mind and heart that none knew him but to love him.

Resolved, That we hereby tender to the widow, children, and other friends of the deceased, our heartfelt sympathy in their affliction.

Resolved, That these resolutions be published with the proceedings of this Convention, and a copy of them be forwarded to the widow of the deceased.

The resolutions were spoken upon by Drs. Rogers, Allport, and Perine, and were unanimously adopted.

The next subject was then taken up, being "Sensitive Dentine."

Dr. Franklin spoke of the causes of sensitive dentine, and thought it due to the presence of acids generated by the decomposition of food which collect underneath the gum; cited a case which resulted from dyspepsia, and considered the prevailing diet of this country was injurious to the system; would suggest the use of alkalies in such cases.

Dr. Burras referred to the molar teeth, and thought caries was owing to the action of acids in the indentations and fissures in the enamel of such teeth; considered some were more disposed to decay than others. Hereditary traits were also observable, and alluded to several interesting cases.

Dr. Colburn remarked, the acid theory was once fully adopted by him, but upon residing among the natives of the Sandwich Islands his views changed, as their diet is principally acid. They allow their food to ferment and become sour before eating it, yet their teeth remain perfectly sound.

Dr. Taft read an essay from Dr. Geo. F. Foote,* of Cincinnati, upon this subject.

Dr. Morgan indorsed the sentiment that sensitive dentine is the normal condition of the organ, and that any agent that modifies this condition must injure the tooth.

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* This Essay will appear in the October number of the DENTAL COSMOS.

Dr. Priest did not think we look far enough back for the cause of caries, considering it due to a want of life force, and that it was necessary for the child to receive proper elements of nutrition while in embryo as well as at a subsequent period.

Dr. Atkinson considered that sensitive dentine was frequently caused by want of harmony on the part of the patient and operator; thought this a subject of importance; believed there were no nerves in the dental tubuli. To ascertain the cause of caries, we must consider nationality and the crossing of blood.

Adjourned.

AFTERNON SESSION.

The next subject was then taken up, being "Exposed or Wounded Pulp."

Dr. Taft said that if in excavating he exposed the pulp, he dries the cavity and places in a temporary filling, sometimes uses os artificiel, and in one-half the cases there is a bony deposition that will protect and cover the pulp; this is generally accomplished in two or three weeks—in some longer, and in others no change takes place. He removes the temporary filling, and if the pulp is covered, fills the tooth with gold, thus retaining it in a vital state. If there is a large orifice, an inflamed condition of the pulp, or an impaired constitution, the difficulties are greatly increased and success is not certain. He usually selects his cases for this kind of treatment; thought a fair average of success should prove its value. Considered a dead tooth, however well filled, was not worth half as much as a living one; the pulp does not die from exposure, but from other circumstances, such as contact with foreign substances, changes of temperature, etc. The same principles of treatment are as applicable to the pulp as to any other part, some calling for local, while others demand both constitutional and topical treatment.

Dr. Westcott remarked that he had not met with success in the capping of exposed pulps, and had abandoned such treatment; did not think a dead tooth would decay more readily than a living one, but considered it would be more subject to periostitis and other pathological conditions. Did not believe, if the lining membrane of the pulp was ruptured, it would be restored and covered by a bony deposition; he had never seen a single case of the pulp being protected by secondary dentine after exposure, and did not believe such a pulp could be restored to its normal condition. Had not for several years attempted to save a pulp after it was fully exposed. In his treatment of exposed pulps, discards escharotics, if possible, and passes a broach into the canal and removes the pulp at once; in such cases fills the tooth immediately, and has never had a single case of alveolar abscess to follow; sometimes is obliged to treat the pulp, which he does in the following manner: Takes a small pledget of cotton moistened with creosote and a minute quantity of arsenious acid, applies this directly to the pulp; hermetically seals the cavity, inserting a temporary tin-foil filling; can leave this application in the tooth three months without difficulty, and in removing it, is governed by the convenience of the patient.

Dr. Dwinell would ask Dr. Westcott if he did not think the arsenic would pass through the tubuli and make an impression upon the periosteum, and eventually induce inflammatory action?

Dr. Westcott replied that he used but a small quantity of arsenious acid, about half the size of a pin's head. A large portion should never be introduced; in the majority of cases is perfectly successful; he always prefers to treat a tooth with an abscess while it is discharging.

Dr. Atkinson thought Dr. Wescott's practice a good one; in the treatment of exposed pulp we must understand the affinity between a certain portion of arsenic and a given quantity of albumen; was of opinion that a small amount of arsenious acid was all that was required for an effective application. Exposed pulps when presented for treatment are usually much inflamed, and cannot be removed at once without an application, though he prefers to perform the "heroic" practice whenever practicable; referred to the formation of secondary dentine in the teeth of very aged persons.

Dr. Dwinell said, in cases of exposed pulp, he classifies his patients, in some, filling over the pulp, but when inflamed, destroys them; where they are slightly exposed, treats with camphor or chloride of zinc, allowing it to remain a short time; fills the cavity, and cannot recall a single instance of failure. Considered one of the prominent offices of the pulp was to furnish secondary dentine, as its first office was to build the tooth. He alluded to specimens in his possession where large portions of secondary dentine had been deposited. For treatment of exposed pulps sometimes uses the arsenious paste, but usually prefers the following practice: dries out the cavity perfectly, applies a small portion of creosote, and with a nerve broach breaks up the attachments of the pulp in the canal; by this motion promotes absorption of the creosote, and so continues the application of the creosote and broach until he reaches the apex of the fang; this method gives no pain. He usually fills immediately, and has never had any subsequent trouble. Thought a tooth was much injured by a destruction of the pulp, and in many cases has left partially decayed dentine in the cavity as a protection, which has been subsequently restored, the tooth and pulp remaining perfect.

Dr. Wetherbee said, observation had taught him the impracticability of trying to preserve exposed pulps, as they died in every case that he had attempted so to do; stated his objections to such practice. When he treats the pulp and fills the fang, alveolar abscess never occurs, but sometimes has this condition when the pulp dies; spoke of several interesting cases; remarked, the secondary dentine which is found in the teeth of old persons takes fifteen or twenty years to be deposited.

Dr. Rogers had never known of a case where the pulp was wounded, to be restored by the use of caps or any other method. He thought if those gentlemen would open such teeth that had been treated by capping, and were claimed to be successful, they would find the pulp entirely dead; had seen several such cases; thought if a tooth was properly treated and filled, it would be nearly as good as if the pulp was alive; has sometimes capped an exposed pulp, and the tooth would remain perfectly healthy for a year, but at that time an abscess would be formed; has, therefore, abandoned the practice. Thought if a portion of arsenious acid was left in the tooth it would permeate the tubuli, making an impression on the periosteum, and the tooth would be eventually lost.

Dr. Westcott thought a portion of arsenious acid, the size of a grain of sand, could be used with impunity; that it might be allowed to remain six months or a year, and he did not much care if it never was taken out.

Adjourned.

FOURTH DAY—MORNING SESSION.

The subject of "Exposed or Wounded Pulp" was continued.

Dr. Clark said he never attempted to save a pulp after exposure, but treats and removes it; compactly fills the pulp cavity; when exposure occurs from excavation of dead bone, he removes the pulp with a broach and fills immediately; when there is an inflamed condition, applies the arsenious paste. If the pulp is suppurating, or there is alveolar abscess, applies creosote, and restores the color by a preparation of chloride of lime—called in his State, Darby's Prophylactic Fluid; had used this with good success.

Dr. Morgan does not always destroy exposed pulp, believing that a tooth possessing vitality is far superior to a dead one. If he exposes a pulp in excavating, he bridges his filling, and has met with good success. In patients of strumous habits allows the arsenical application to remain only three hours; after taking away the pulp, fills the tooth with cotton, allowing it to remain ten days; spoke of numerous cases of fang fillings which he had seen from several practitioners, and only one fang in every ten would be found to be perfectly filled; objected to the indiscriminate destruction of exposed pulps, alluding to several interesting cases.

Dr. Dwinell had met with better success in capping, with young patients and those in possession of a large amount of vitality. He treats inflamed pulps about to run into the suppurative stage, by ordering leeches to be applied locally, and a dose of salts constitutionally. Thought sensation in dentine was due to the presence of what he would term a *neurotic* fluid in the tubuli, which transmitted sensation to the pulp. He spoke of, and disbelieved, Tome's theory of the presence of nerve fibres in the dentinal tubuli; thought discoloration of teeth was caused by a disintegration of the blood corpuscles, the *hematine* permeating the dentinal tubuli with the *liquor sanguinous;* treats such teeth with chloride of lime or soda; has also used sulphate of lime.

The discussion at this stage became somewhat of a conversational character, and was participated in by Drs. Rogers, Stackpole, Allen, Dwinell, Whitney, Tefft, Merryman, and Rodrigues.

Miscellaneous business being in order, Dr. Atkinson presented a paper upon *Dental Teachings.**

Dr. Franklin referred to a case of a gentleman for whom two central incisors were transplanted with success—*the teeth being natural ones that had been imported in alcohol from France.* On being first introduced, they gave considerable trouble, but eventually became firm in the alveoli, and have for years been doing good service.

Dr. Taft presented a model of a case under the treatment of Dr. Sutton, of Long Island, of protrusion of the lower jaw.

Dr. Perine presented a material obtained from coal oil, called Parafine, and referred to its use in taking impressions.

Dr. Roberts presented to the notice of members hard rubber corundum-wheels.

Dr. Franklin, for Dr. Asay, referred to a new method of fastening blocks to metallic plates, by means of the vulcanite material.

On motion, adjourned.

We intended to give a short notice of the different mechanical appliances and instruments that were on exhibition, but have only space to refer to them. The following gentlemen had Vulcanizers on exhibition: Drs. E. A. L. Roberts, New York City; Hayes & Brown, and B. T. Whitney, of Buffalo. Dental Chairs of Archer & Ask's manufacture. Teeth from W. B. Roberts, and the New York Tooth Manufacturing Company.

EDITORIAL.

TAFT'S OPERATIVE DENTISTRY.

For want of space, we were obliged to defer further reference to this work in our last issue: nor would we do so now, but to endeavor to correct some of those wrong "teachings" which are "calculated to lead young members of the profession into error."

The principle in the article on *Irregularity* has been carefully observed that, if one cannot teach properly, it is better not to teach at all. If irregularity of the teeth is not a part of operative dentistry, it ought not to have been referred to in the work. If it be a part, then a proper reference should have been made, as it is one of the most important branches of the dentist's occupation at the present time. It is not the most important, perhaps, as far as hard work is concerned, but for the well-being of the patient, in some respects, and the increasing taste and refinement of that class of patients who seek the services of the educated dentist, it is one of the most important branches of our art. To have referred to it at all by the author, it placed him under obligations to do so properly, and to tell the truth, so that the young practitioner may not be misled in his studies nor the old confirmed in his ignorance.

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* This Paper will be found in another part of the Dental Cosmos.

There are *two* pages devoted to this important subject, and the old and false doctrine advanced as the principal cause of irregularity: "The principal cause of irregularity is a disproportion between the actual size of the arch and the size required for the accommodation of the teeth." This implies that the natural and relative development of organs, physiologically speaking, is consummately stupid. It is the most pernicious doctrine that can be advanced; it gives loose reins to the ignorant, and those thus instructed, to set in to correcting what appears to them a *lusus naturæ.*

The principal cause of irregularity is the intermeddling of the dentist to prevent, to them, the apparent shortcoming of nature. The disproportion between the size of the teeth and the jaws, during the period of their eruption, is in many cases very great, but it is not ultimately so, as a rule. Teeth which are irregular during that time usually correct themselves, when this disproportion exists; but when one tooth is in or outside of the arch, it is another thing, and in such cases it is not always for want of room. Nine-tenths of the cases of irregularity which come under our observation and treatment have been produced by dentists and parents extracting deciduous, and sometimes permanent teeth, prematurely or injudiciously.

The author says, that "the teeth most liable to be out of position are the cuspidate," (*cuspidati* is doubtless meant.) There is no reason given why these teeth are most *liable* to be out of place; but we will pass it as sound doctrine, as doubtless the author practices on the principle that, when the permanent lateral incisors are erupting, he extracts the deciduous canines, which causes the laterals to approximate the deciduous molars; and when the permanent canines make their appearance, *lo and behold,* the jaw is found to be disproportionate to the size of the teeth, and one tooth after another must be extracted, in order to correct this terrible deficiency of nature, and establish the truth, that the community enjoy the inestimable blessing of a family dentist!

There are a good many interesting ideas contained in the article above referred to, but we cannot leave it without calling the attention of the inquirer to another physiological fact. He observes: "In irregular teeth parts are approximated that nature did not intend should be brought together."[!!]

Atrophy. This article is not of much practical value, and will not receive attention, except to correct a remark of practical importance, which does not correspond with our observation. He says: "The front upper teeth are attacked by it only on the anterior surfaces." We have not made a relative statistic as to the frequency of this affection being more common to the anterior than to the posterior surfaces, but we have very often plugged cavities on the back parts of front upper teeth, and only a few days since we plugged a cavity on the posterior surface of each of the four front incisors, which we attributed to this affection. The front surfaces were also defective, but had been well brushed, and were in a sound condition. We have seldom observed a series of reasons advanced, accounting for or explaining an affection, so indefinite and jumbled-up, as are contained under this heading.

The article on *Exostosis* is very good; and the author reminds the reader very frequently, that a tooth affected by it is very difficult to extract.

In the articles on *Denuding* and *Chemical Abrasion* the author seems to make a distinction without a difference. We cannot agree that *cupping* is analogous to *denuding* or *chemical abrasion*, but local, and the result of friction; nor do we think it is treatable constitutionally.

"*Necrosis of the Teeth.*" The author says: "By this term is understood the death of the part affected." This is a fuller definition than has usually been given. It has generally been believed, that when a part is dead, it ceases to be *affected.* He further adds: "It has been remarked that the condition is similar to mortification in the soft parts of the system. But in the latter there occurs a change of structure; whereas in the bones, and particularly in the teeth, there is not necessarily any change consequent on the loss of vitality." From this we dissent. Whether it be tooth substance or any other tissue, as soon as the vitality of a tooth is lost, it is subject to the macerating influences of the fluids of the mouth. Our experience is, that the enamel of dead teeth becomes friable, and the dentine loses its density and toughness, from a suspension of the supply of nutrition to it. On many occasions, when we have drilled open dead teeth to improve their appearance, by excavating the walls of the pulp cavity and plugging with gold, we could have removed all the dentine of the crown, so readily did it yield under the cutting instrument. When we made the experiment, we could not obtain as thin a slab from a dead tooth as a living one for microscopic observations. The slab of the dead tooth would crumble, especially the enamel. If it is meant to imply, also, that a tooth whose nerve has been destroyed and the pulp cavity filled does not undergo deterioration, it is erroneous in doctrine and in fact.

J. D. W.

(To be continued.)

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEO. J. ZIEGLER, M.D.

"*On the Submaxillary Glands.* By M. CLAUDE BERNARD.—Having in our last lecture brought to a close the history of the parotidian secretion, we shall now successively investigate the physiological properties of the two other principal glands which concur in the production of the saliva; for, as we have already remarked, each of these small secreting bodies has its own peculiar functions to fulfill, and its place cannot, therefore, be filled by any of its congeners.

"The submaxillary gland, the properties of which will fix our attention to-day, offers, in the dog, an anatomical disposition almost entirely similar to that which it exhibits in the human species. In both cases we find it to be a large conglomerated gland, endowed with a distinct excretory duct, quite large enough to admit a tube for the purposes of experimental investigation; this canal has received the name of Wharton's duct, and there only exists one on each side.

"In former times anatomists had erroneously asserted that Bartholin's gland opened into the excretory duct of the submaxillary gland; a statement completely at variance with facts. Each of these two glands possesses its own proper duct, and they remain perfectly distinct during the whole of their course, although the buccal orifices of the two canals lie so close together as to open under the same papilla.

"It has also been advanced, that in the human species there exists a direct communication between the sublingual and submaxillary glands; some of the ducts of Rivinus, derived from the former, having been supposed to fall into Wharton's duct. But the real existence of a similar disposition still remains to be proved.

"The submaxillary gland is supplied with blood from two distinct sources; its principal artery reaches the hilum of the gland, and through this point penetrates into its substance; while the lesser artery is mainly distributed to its upper and posterior part. Two different orders of nerves appear to preside over its physiological functions; the sympathetic nerve, in the first place, gives off several twigs to the submaxillary plexus; and, in the second place, a slender branch separates from the lingual branch of the lower maxillary nerve, in the immediate vicinity of the gland, and falls into the above-mentioned plexus, from which the nerves connected with the gland are all derived. By some of its fibres, no doubt, this nerve is connected with the branch from which it appears to derive its origin; but by far the greater part of this little ramus arises from a division of the facial, which unites with the lingual nerve, without becoming really anastomosed with it, and, after following its course for a short space, separates almost entirely from it, and reaches the submaxillary plexus. This *motor nerve* is styled the chorda tympani; it arises from the facial, a few millimetres above the foramen stylo-mastoideum, follows an ascending course, penetrates into the middle ear, and, during a short space, is comprised within the membrana tympani, between the incus and malleus. It then descends toward the scissura Glaseri, and emerges from the petrous process close by the *spine* of the sphenoid bones; after describing this curve, it meets with the lingual nerve, and follows its course as already described.

"In what manner may we suppose the gland to be acted upon by this nervous filament? We meet here with one of those reactions of the sensitive on the motor fibres, generally described under the name of reflex actions; gustative impressions are conveyed toward the nervous centre by means of the lingual nerve, and the facial acts in consequence upon the submaxillary gland. The reality of this hypothesis can easily be demonstrated by direct experiment; let the lingual nerve be divided, and all sapid sensations having ceased at once, vinegar may be poured into the animal's mouth without eliciting a single drop of saliva from the gland; but if the central extremity of the divided nerve is galvanized, an abundant secretion is at once called forth. Lastly, the facial itself being divided, all reflex action is immediately suppressed. But, as we shall presently see, when the peripheric extremity of the motor nerve connected with the submaxillary gland is submitted to galvanic action, an abundant flow of saliva is again produced.

"But in order to perform these various experiments, it becomes indispensable to lay open the surgical region which contains the organs on which the necessary operations are performed. The following *modus operandi* will enable the physiologist to realize all the conditions desirable for his experiments. Let an incision be made along the inner side of the lower edge of the inferior maxillary bone, extending from its anterior third to the immediate vicinity of the transverse process of the atlas; let the platysma myoides be carefully cut through; then let the digastric muscle be divided, and its posterior half removed at its insertions; and nearly all the parts which are concerned in these experiments will then be laid open to view. The greatest care must be taken in performing the operation not to injure the important organs which lie immediately under the muscles. The lips of the wound being now drawn apart, a cavity is discovered, which contains the submaxillary gland; and this body being itself drawn out of its lodge by means of a hook, its inner or deep surface is discovered, in the centre of which lies the hilum of the gland, through which penetrate the principal artery, the chorda tympani, or motor nerve, and several ramifications of the ganglionic system. The inner paries of the cavity itself contains the external carotid, lingual, and facial arteries, accompanied by the trunk of the hypoglossal nerve. In front, the lower paries of the cavity is constituted by the mylo-hyoideus, which, being divided perpendicularly to its fibres, and then raised by means of hooks, the ducts of the submaxillary and sublingual glands, crossed by the lingual nerve, are discovered; and, by following backward the course of the latter nerve, the chorda tympani is seen at a given point to separate from it, and to produce, by its anastomosis with the ramifications of the sympathetic, that gangliform plexus, from which, as before stated, arise the nerves which penetrate into the gland's proper substance.

"The operation just described has been already performed upon the dog that has been just brought in; we shall now open Wharton's duct, plunge a tube into the canal, and excite the secretion by means of vinegar; and you will at once be satisfied that the submaxillary gland enjoys a much higher degree of sensibility than the parotid, a fact we have already endeavored to prove in our last lecture.

"(The experiment is performed with perfect success; several drops of liquid escape immediately from the tube, and are collected in a glass.)

"You perceive, gentlemen, that the submaxillary saliva is ropy and viscid; properties which vary considerably when one individual is compared to another. It is quite impossible to predict beforehand how great the viscosity of this liquid will be found to be in given individuals; but, through nervous agency, these peculiar properties may be increased or diminished at will. We shall now cut the chorda tympani after its separation from the lingual nerve, and direct a galvanic current through its peripheric extremity; the saliva obtained in this manner will be less viscid than that which we have already produced by means of gustative impressions.

" (The experiment is performed on the same animal, and meets with perfect success.)

"Another experiment now remains to be performed: we shall galvanize the sympathetic nerve; and the chorda tympani, being entirely paralyzed by the operation which has just taken place, the saliva obtained will evidently have been generated under the exclusive influence of the ganglionic system; an experiment which proves that the sympathetic nerve, entirely unassisted, is capable of acting upon this gland; how different in this respect is the submaxillary from the parotid!

"(The experiment is successfully performed; the liquid produced is more viscid than previously, but its amount appears insignificant when compared with that recently obtained by exciting the motor nerve.)

"You must have been convinced by these experiments, gentlemen, that the submaxillary gland enjoys a double nervous system—that two distinct sets of nerves preside over its physiological functions; those derived from the facial increase the abundance and diminish the viscosity of the secretion, while those which spring from the ganglionic system act precisely in the opposite direction. These results had already been, in some measure, made known to you during the protracted study we devoted to the motor nerve of the parotid gland.

" The influence which the ganglionic system exercises over the submaxillary gland explains the power enjoyed over this secretion by various causes of excitement acting upon distant parts of the alimentary canal; thus, for instance, the direct introduction of food into the stomach generally stimulates the flow of saliva from the submaxillary glands; a fact easily ascertained in animals provided with an artificial opening into the gastric cavity."—(*Med. Times and Gaz.*, June 2.)

"*Salivary Calculus.*—At a late sitting of the Academy of Sciences, Dr. Jules Cloquet gave an account of a calculus extracted by Dr. Burdel, of Vierzon, from the salivary duct of an infant only three weeks old. On the third instant, a poor woman called with the little patient upon Dr. Burdel, stating that it could not take the breast, which she attributed to its being tongue-tied. Upon examination, Dr. Burdel did not discover any string or ligament under the tongue, but found the sublingual gland so excessively developed as to raise the tongue considerably from the cavity in which it lies. He soon discovered, by touching the tumor with his little finger, that it must contain a hard substance. A slight pressure brought to light the extremity of the calculus ending in a fine point, and, after some unsuccessful attempts, he succeeded in extracting it without any incision, by means of a pair of fine pincers. Dr. Cloquet described this calculus as of somewhat an egg shape, but ending, as already stated, in a fine point. Its size was that of a grain of wheat; its color yellow;

its surface granulous, wrinkled, and formed of a number of minute cones or paps cemented together at their bases. This is, to Dr. Cloquet's knowledge, the first instance of a salivary calculus formed, as it must have been, before the birth of the infant, when the saliva must be but little charged with salts. M. Fremy has ascertained by analysis that this calculus was almost exclusively composed of tri-basic phosphate of lime, and a small fraction of nitrogenous organic matter, which must have been mucus from the salivary duct."—(*Am. Druggists' Circular.*)

"*False Teeth Impacted in the Pharynx.*—At a recent meeting of the Medico-Chirurgical Society of Edinburgh, Mr. Spence showed a portion of a set of false teeth, fixed in the usual way in a gold plate, which had been swallowed by a man during his sleep, and had become impacted in the pharynx. The teeth had been stopped at the front part of the pharynx, opposite the cricoid cartilage, in such a manner that the posterior part of the pharynx was left quite free, and a probang was passed into the œsophagus without detecting the presence of the foreign body. On putting the finger into the pharynx, however, Mr. Spence readily ascertained the situation in which the false teeth had been caught, and succeeded, with some difficulty, in removing them. This case impressed the caution, that false teeth should not be worn during the night, and that the metal plate should be made to cover more of the gums, so as to take a firmer hold of them. It was of importance to remember, in the detection of foreign bodies in the pharynx, not to trust to the probang without careful examination with the finger."—(*Edinburgh Med. Journ. and Boston Med. and Surg. Jour.*)

On Thompson's Gingival Margin, a Sign of Pulmonary Tuberculosis. By A. P. Dutcher, M.D.—The following general remarks and conclusions are from a paper on the above, in the *Med. and Surg. Reporter*, for August 4. We present them as a contribution to our knowledge, without regarding them as conclusive:—

"For the benefit of those who have not Dr. Thompson's Lectures on Consumption, we will here give a brief description of his gingival margin or streak. In most phthisical patients, it will be found at the edge of the gums, where they are reflected around the teeth. This border is usually deeper in color than the adjacent surface, and has a festooned appearance. This line is sometimes a mere streak, and at others a margin of more than two lines in breadth. As the disease progresses and becomes more decided in its character, this margin will exhibit a vermilion tint, inclining to lake. As a general occurrence, it is most distinct around the incisor teeth, but it is frequently apparent also round the molars. In very grave cases, where the margin is strongly defined, it is not uncommon to find hypertrophy of the gums also accompanying it. When this occurs, it renders the diagnosis of the streak more pronounced.

"But this sign should not be taken without some caution. Tartar, mercury, and iodine will produce a redness of the gums, which may be taken for it. In these instances the discoloration is more widely diffused; or, if it in any way assumes the appearance of the gingival margin, it does not so naturally merge in the tint of the adjacent membrane. When the discoloration is occasioned by the accumulation of tartar alone, it may be distinguished from that by the ragged and uneven appearance of the border, and from its continuance on the gums after the tartar has been scaled off. But if we exercise due care, there is not much danger of going astray, for there is no evidence that the gingival margin ever occurs in any other malady; such, at least, is the testimony of Drs. Thompson, Roe, Pierce, and Smith, who have had extensive opportunities of observation at the Brompton Hospital for Consumptives, London. * *

"1st. Thompson's gingival margin is an unfailing sign of the tubercular diathesis.

"2d. That when present, no matter how obscure every other symptom and sign of phthisis is, we may, with certainty, prognosticate its development at no distant day.

"3d. In managing cases of phthisis, if the margin is present, and disappears, under treatment, it is an evidence of amendment, and should be regarded as a favorable omen.

"4th. When the margin at first appears on the incisors, and gradually extends around the molar teeth, when suitable treatment is employed, it may be regarded as an unfavorable indication; and if it changes from the bright vermilion to a dark red or purple, the case will terminate more rapidly.

"5th. In cases where the margin is absent, whatever be the general symptoms, we may hope that the constitution is not so greatly injured by the morbid condition of the vital fluid, that we can restore the individual to comparative health by the use of suitable remedies, and thus avert or retard the permanent existence of pulmonary tuberculosis."

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"*Neuralgia of the Face of Thirteen Years' Standing; Cure by Removing a Portion of the Nerve.* By E. Andrews, M.D.—J—— B——, of Kankakee, had suffered, by his account, thirteen years, with a most terrible neuralgia in the lower part of the right side of his face. The pain seemed to recur in paroxysms every three or four minutes, when he would be incapable of attending to anything but his extreme torture, and endeavor to alleviate a little his agony by rubbing the part briskly with his hand until the paroxysm subsided.

"On examination of the case, I discovered that the pain was limited exclusively to the nerves which make their exit from the right anterior mental foramen. I judged, therefore, that the cause of the trouble was at that opening, and that a section of the nerve on the proximal side of it would relieve the pain. I was the more willing to adopt this course because the patient had already exhausted almost every other resource in vain, and his suffering was so terrible that the paralysis of the nerve, by removing a portion, was comparatively a trivial evil. I therefore administered chloroform and ether to anæsthesia, and operated as follows: I made a semicircular incision over the masseter muscle down to the ramus of the jaw, with the convexity of the incision downward. Dissecting the flap upward, the external surface of the ramus of the jaw was laid bare, and the trephine applied. If a line be drawn from the angle of the jaw upward and forward to a point half an inch behind the last molar tooth, and the centre pin of a half inch trephine be placed upon this line at such a point that the crown of the instrument is a quarter of an inch from the anterior edge of the ramus, the nerve will be found crossing the centre of the opening made by the instrument. I have found this direction rather more convenient than those laid down by our authors. When the crown of the trephine cuts with the whole circumference in cancellar tissue, it may be withdrawn, and the button of bone removed by the broad end of an elevator. This leaves the inner table of bone intact, and does not seriously weaken an adult jaw. Half an inch of the nerve having been removed with the scissors, and the hæmorrhage stopped by pressure, the wound was closed up. For twenty-four hours the patient suffered, instead of the paroxysmal torture which previously affected him, a steady pain which he referred to the parts supplied by the severed trunk; after that, to his great delight, he found himself free from all suffering. The wound healed well, and the patient was discharged."—(*Chicago Medical Examiner.*)

"*New Method of Producing Local Anæsthesia.*—Mr. Richardson, the dentist, has sent us a communication, in which he says: 'The subject of local anæsthesia has much excited the attention of the profession lately. Dr. Richardson, Mr. Nunneley, and others, have devoted much time and research to it. Narcotics, congelation, inhalation of ether and chloroform, and lastly, electricity, have all been tried, but from some practical disadvantages in their application, and from the occurrence of dangerous and even fatal effects, none of these have met either the wants of the case or the general concurrence of the dental profession. In pursuing a series of experiments for effecting certain improvements in the "Tooth Protector," a notice of which apparatus was inserted in *The Lancet* of 1858, I have devised a plan for causing local anæsthesia during the extraction of teeth without producing a corresponding effect on the system generally—viz., by immersing the affected part in chloroform, and including in the part immersed as much of the adjacent structures as may be required. It is obvious that a plan so simple must be universally applicable, and, should its reputation be maintained, prevent the escape of chloroform, and thus intensify its local effect. The cup is about half filled with cotton wool, which is then saturated with a sufficient quantity of chloroform, generally from ten to fifteen drops. The time within which local insensibility is produced varies from seven minutes to a quarter of an hour. It is true that the local anæsthesia is not, in all cases, equally complete; but even where pain occurs, the remedy will be found to moderate it to a point within which it becomes perfectly tolerable, and has lost the distressing agony of tooth extraction. It is important for the operator to remember, that as soon as insensibility of the part ensues, the cup should be removed and extraction instantly performed. Of sixty cases, on which the foregoing statements are based, only two occurred in which the remedy failed to mitigate the pain; while in ten cases the local insensibility during extraction was complete.' "—(*Lancet.*)

MISCELLANY.

The *Med. Times and Gaz.* gives the following summary of some investigations on the recondite subject of nerve force:—"Is nerve force a polar force? is there any manifestation of current force in nerves during action?—are questions proposed for consideration by Mr. H. F. Baxter, in the *Edinburgh Philosophical Journal*, where he has published an account of his experiments, in which he employed—1, The galvanometer;

2, the galvanoscopic frog; and 3, a magnetized needle. He deduces the following conclusions: That nerve force *during* nerve action is not *current* force; that the electric condition of the nerve, as manifested by the nerve current, is not *converted* during nerve action into current force; that the electric condition of the nerve may be merely a condition for nerve action, perhaps a necessary condition; that the evidence is in favor of nerve force being polar; and that it is of a higher character than any other polar force, and that the conversion of electric force into nerve force *during* nerve action may be regarded as an open question."

In the course of a lecture on the functions of the œsophagus, (*ibid.*, July 7,) M. C. Bernard thus refers to the quantity of saliva secreted during mastication:—"An opening has been made on this canal for the purpose of extracting the alimentary bolus, in the state in which it makes its exit from the mouth. This experiment enables us to ascertain with what proportion of saliva it has been impregnated during mastication; by giving the animal dry food, and weighing it before and after the operation, the quantity of saliva therein contained is easily calculated; thus, when a horse is given ten grammes of straw, which has been previously dried with care, the mass extracted from the œsophagus weighs a hundred grammes; it might thence be inferred that the animal adds *nine hundred* parts of saliva to *one hundred* parts of food; the proportion, however, varies with the different descriptions of alimentary substances. When the parotidian duct has been opened on both sides, its secretion does not, of course, flow into the mouth, so that the process of mastication is more difficult and lasts a much longer time; the animal's thirst is also increased; all these results are easy to be explained by the nature of the gland's functions, which we have just been studying in the preceding lecture."

In a subsequent lecture, on the gastric juice, (*ibid.*, July 28,) Bernard observes, in relation to the intermittent flow of this secretion:—"But the secretion of these little glands is an intermittent one, in man as well as in the lower animals. Dr. Beaumont states that in the case of his Canadian patient, the fluid only made its appearance when food was introduced into the stomach, but as soon as the digestive process was over, no secretion whatever took place within the gastric cavity until the patient had made another meal. In the same manner, when a canula has been introduced into a dog's stomach, not a drop of liquid escapes, provided the animal has been previously kept fasting; but, as soon as it begins to feed, large quantities of gastric juice are at once seen to flow from the outer orifice of the tube; and the result may be obtained by merely showing the animal its food, as in the case of the salivary glands. In the dog which we exhibit here, the stomach is at present in a state of rest; but the sight of food will immediately stimulate the physiological activity of its glandular elements. (The experiment is performed, and perfectly succeeds; a piece of meat being brought in, the gastric juice immediately flows in abundance from the open tube, before the animal has begun to feed.)

"You perceive, gentlemen, that, as in the case of most other glands, the process of secretion is not continually going on in the stomach. During the interval which separates one meal from another, the mucous coat is lined with a thick layer of grayish epithelium, and its reaction is alkaline; but as soon as the digestive process commences, it swells, becomes ingested, and grows red; the epithelium falls off in scales, and the gastric juice appears on the inner surface of the stomach, in the same manner as perspiration on the skin. It seems probable that some similar process takes place in all glands during the period of rest. Saliva, for instance, when it begins to flow, contains a considerable proportion of epithelium at first; but the liquid soon becomes transparent, and contains only a few epithelial cells."

The *Half-Yearly Abstract* gives, upon the authority of the *Archives Gén. de Méd.*, the following resumé of Dr. Maingault's observations on diphtheritic paralysis:—"The numerous facts collected in this memoir show very clearly that there is a variety of paralysis supervening upon diphtheria, which deserves the name of *diphtheritic paralysis.* This affection may be local paralysis of the velum palati or pharynx. Frequently, also, it fixes upon distant parts; sometimes upon the lower limbs exclusively (paraplegia), sometimes upon the limbs and trunk generally, sometimes upon the eye singly. Its development may be sudden or progressive. There is no necessary connection between the severity of the diphtheritic affection and the extent and gravity of the paralysis, for in some cases profound and extensive paralysis has supervened upon a most benignant form of diphtheria. Nor can albuminuria be looked upon as the determining cause of the paralysis, for in some cases the urine was perfectly free from albumen. As yet, also, the scalpel has failed to detect anything abnormal in the condition of the nervous centres. Where the affection is general, the termination may be fatal: but the usual course is for the paralytic symptoms to pass off in a period varying from two to eight months."

In the course of an interesting paper on craniology and the different collections of skulls, (*Brit. and For. Med.-Chir. Rev.*, July, 1860,) it is stated that: "In 1857, Dr. George Williamson, of the Museum of the Army Medical Department, in two articles in the *Dublin Quarterly Journal of Medical Science*, gave a lengthened enumeration and description of the majority of the 601 human crania and skeletons preserved in the museum at Fort Pitt. His arrangement was a new and peculiar one. He adopted four classes: 1, oval-shaped skulls; 2, skulls with projecting alveolar processes, or with the nasal bones on the same plane; 3, skulls with very prominent superciliary ridges; and 4, skulls with broad and flat faces. In this descriptive catalogue, for so it may be considered, the author directed special attention to a novel feature of distinction among human races, viz., the form of the anterior nasal orifice. This differs remarkably in the different families of man, dependently upon the differing combinations of the forms and inclinations of the superior maxillary, nasal, and other bones. Dr. Williamson has been at considerable pains to study and to illustrate these diversities by a number of figures. Although apparently trivial in itself, the observation is a valid one, and indicates the universal diffusion of that diversity which marks every feature in the various races of man."

The importance of a proper appreciation of the conservative power of the living organism is so great, that we risk the imputation of repetition in presenting the following from a report of the proceedings of the British Association for the Advancement of Science, in the *Lancet*, of July 7. "M. Ollier, of Lyons, exhibited a series of specimens illustrating the Artificial Production of Bone and Osseous Grafts. In one specimen the radius had been wholly removed, leaving the periosteum entire, and the bone was reproduced. In a similar experiment, with the removal of the periosteum as well, there was no regeneration of bone. He transplanted portions of periosteum round the muscles of the thigh, and they secreted bone. This was done in the form of strips twisted round, and they secreted bone of a spiral shape. In fact, any form of bony secretion can be obtained almost at the fancy of the experimenter. M. Ollier transplanted portions of periosteum from one part of the body to another, beneath the skin of the head and elsewhere, and not in contact with bone, and obtained bony secretions from them. This could also be obtained by transplanting this membrane from one animal to another. He transplanted entire bones and portions of bones with their proper membranes, and they retained their vitality; if the membranes were removed in these experiments, the bones died, and suppuration ensued. All these osseous secretions possessed the true and normal characters of bone. The specimens clearly proved all the author advanced, and it would seem that the periosteum is the true secreting membrane of bone, and that it can be grafted in a manner similar to that of plants, and will, as it were, take root and grow."

It is also stated in the same report that "Dr. Beale demonstrated, by a series of preparations and diagrams, how every elementary fibre of striped muscle was abundantly supplied with nerves. He believes that every single fibre receives one or more nervous fibres, which will be found hereafter to account for complicated muscular movements. Wherever these minute nerves are distributed are found little oval bodies, which are the means of communication between the muscular and nervous fibres. These nerves are found to be more numerous in some muscles than in others—the tongue and diaphragm, for example—and are surrounded by multitudes of these oval bodies. The nervous fibres are constantly undergoing decay and being reproduced. Dr. Beale's discovery is one of considerable value in physiology, and much importance was attached to it by the Association."

The Paris correspondent of the *Lancet*, in his summary of the discussion at the Acad. of Med. of that city, states that "M. Civiale, a great authority on lithotrity, next read a paper upon certain organic *débris* sometimes met with as constituting the nucleus of vesical calculi. These were mostly hairs and teeth. In one case, that of a female, noticed by M. Civiale, these materials were, without doubt, furnished by an ovarian cyst, which had contracted adhesions with the bladder-wall, and had opened into this viscus. But in certain other cases, in which hairs alone were found, M. Civiale seemed inclined to think that these had been detached from the pubes, and had traveled along the meatus up into the bladder."

The *Lancet* gives the following account of the "removal of both the superior and inferior maxillæ for epithelial cancer of the face. M. Maisonneuve operated, at the Pitié Hospital of Paris, upon a patient fifty-nine years old, affected with epithelial cancer of the entire left side of the face, on February twenty-third. Almost the whole of the superior and inferior maxillæ were removed on one side, and a large chasm left. The tongue had been secured by a thread, and the results were so favorable that the patient left the hospital two months after the operation, the chasm being concealed by a large patch. We hope the *Gazette des Hôpitaux* will not omit to give us notice of the recurrence of the malady, if it should happen."

The following method is recommended (*ibid.*) for moulding chloride of zinc into sticks for the purpose of cauterization. "Soften gutta-percha in boiling alcohol, and incorporate it with finely pulverized chloride of zinc in a warm porcelain mortar, taking equal parts of each. Then roll rapidly on a porphyry slab, to the diameter of a quill, and divide in fragments, each of which shall be pointed at one end. Keep these in a wide-mouthed bottle in powdered lime. These sticks remain perfectly hard, are easily handled, cauterize with great regularity, and act as a sponge through which the chloride will slowly exude, becoming liquid by the action of the air and the skin."

In a paper on the physiological action of the chlorate of potash, translated for the *Boston Med. and Surg. Jour.*, (August 9th,) it is stated that "DR. ISAMBERT experimented upon himself and others with the following results. He found—1st. That the chlorate of potash is absorbed and eliminated with great rapidity, and that it is eliminated unchanged, (still in the form of a chlorate,) and consequently cannot furnish oxygen to the system, as has been supposed. 2d. That the principal channels for its elimination are the salivary glands and kidneys. Traces of it are detected in the saliva within five minutes of its ingestion, and ten minutes later in the urine. At the end of a half hour the process is at its maximum intensity, and it persists from fifteen to thirty-six hours. The duration of the elimination does not seem to depend upon the dose. It was nearly the same with doses ranging from one to twenty grammes daily. Dr. Isambert has detected it in the milk of two nurses who were taking it as a medicine. He has found it in the nasal mucus, the tears, and perspiration. Its presence in the fæcal matters he regards as doubtful, but thinks there is reason for believing that it passes into the bile."

In addition to other facts, Dr. I. mentions the following as the result of his observations on this subject: "Doses of from one to four grammes daily produced no appreciable results. Doses of eight or more grammes induced a decided impression, lasting two or three hours; this was accompanied by a saline taste, apparently identical with that of the chlorate of potash. Although less powerful than a mercurial salivation, the results of over-stimulation were apparent in a weakness of action of the salivary glands for five or six succeeding days. A slight alteration in the voice was noticed. The intensity of the salivary excitation was proportional to the dose administered."

DR. H. B. BURNHAM records (*ibid.*, July 19th,) a very interesting case of salivary calculus, which occurred in a man "aged forty-eight years, of spare habit and slender constitution, who some fourteen years since was seized with a severe pain under the left side of his tongue. He applied to his family physician, who could give him no satisfactory information as to the cause or nature of his complaint; neither could he afford him any relief. He was induced to consult other physicians in his vicinity, and he did so with like results. In the mean time, a small tumor made its appearance on the under side of his tongue, near or at the seat of pain. He went to Boston and consulted the late Dr. ——, who informed him that his disease was cancer, and gave him but little encouragement as to any permanent relief. He returned to his home, determined to abide the result of what he then supposed an incurable disease. From that time until about the first of February last, he has suffered paroxysms of severe and excruciating pain at different times. The tumor gradually increased in size, and the paroxysms of pain became more frequent, until it finally became inflamed, suppurated and burst, discharging a small quantity of pus and a calculus weighing fifteen grains, having the general appearance of ordinary renal or biliary calculi. He has since been entirely free from pain."

Another case of this kind is thus reported in the proceedings of the Boston Soc. for Med. Improvement, in the same journal of a subsequent date. "The specimen was exhibited by DR. JACKSON, in the name of Mr. Frank D. Beer, a member of the present medical class. The patient, a man forty years of age, had been under the care of Dr. Hammond Johnson, of Charlotte Town, Prince Edward's Island, and with whom Mr. B. was a pupil. For some months he had had severe neuralgic pain, with a considerable drawing down of the right side of the face; an external swelling then appeared below the lower jaw upon the right side, and it was thought a fistulous opening would form. In about a week, however, this subsided, and a corresponding swelling appeared, internally, about opposite the canine tooth; in a few days the calculus appeared at a small opening, and was readily extracted by the forceps, with an entire relief from the pain, and improvement of the general health, which had previously declined. The calculus, which was supposed to have formed in the sublingual gland, was equal in bulk to about one-third of an inch, and presented the usual appearance of such bodies, excepting the form, which was quite irregular. The chemical composition was, as usual, according to Dr. Bacon, phosphate of lime, with a little carbonate of lime, and organic matter."

In the report of a case of successful operation of staphyloraphy with silver sutures, by PROFESSOR A. DUGAS, in the *Southern Med. and Surg. Jour.* for August, DR. DESAUSSURE FORD mentions that this "infirmity may exist under three divisions—*first*, where simply the uvula is divided; *second*, by division of uvula and soft palate; *third*, division of uvula, velum, palatine bone, and often palatine process of maxillary bone, often laying the floor of the nasal cavity entirely open; in either of these cases the patients are peculiarly prone to affections of the throat, such as catarrh and inflammations about those parts."

In the *Am. Med. Times*, DR. THOMSON gives, upon the authority of the *Gaz. de Hôpitaux*, the following account of the transmission of foreign matter through the circulation of the mother into the embryo. "M. FLOURENS, in a communication to the French Academy, states that after feeding pregnant animals during the latter forty-five days of gestation with madder, he found the bones of the fœtus quite as deeply tinged with red as those of the mother—conclusive evidence that practically there is but one circulation in both. M. Coste, in confirmation of the experiments of M. Flourens, announced to the Academy a curious fact of the coloration being transmitted by the mother not only to the embryo or to the developed fœtus, but even to the ovum and to the substance of the germ itself, before that substance has undergone any of the transformations of which it is the seat in the formation of the first lineaments of the new being. He sees in this fact 'visible evidence of the manner in which hereditary influence marks each being with an original impress, and, with existence itself, introduces the elements of health or of disease, according as it proceeds from a pure or impure source.' Besides the demonstration of the facility of pathological transmissions, the results obtained by M.

Coste suggest another subject, most important in a medical point of view, whether it may not prove possible to neutralize or even destroy vicious original impressions. There is in this, M. Coste justly remarks, a fit subject for reflection and research by physicians."

In a communication to the *Louisville Monthly Med. News* for July, Dr. Gerhard Paoli treats of the diseases of the parotid gland, and maintains the possibility of its entire extirpation. The following are extracts therefrom:—"I shall first, before attempting to prove that many distinguished surgeons have extirpated the parotid, briefly mention the diseases to which the organ is subject. To these belong carcinoma, osteoides, enchondroma, induration, hypertrophy, sialisma, hydroma, aneurism, lymphatic, and many other tumors."

"Sialisma. These tumors, which are also described under the name of abscesses, or tumores salivales, consist of a collection of thick saliva, contained in a closed sac in the parotid; but instances of these are so rare, that in the annals of medical science very few are recorded; they are the same for the parotid as ranula for the sublingual gland. These tumors sometimes contain sand, or small calculi salivalis; they differ in size from a nut to a goose egg, and even larger. Felix Plater describes such a one. Keemer describes a similar tumor.

"Hygroma. Rokitansky. These also appear very seldom, and are distinguishable from sialisma by their not containing saliva, but a thin, divers colored fluid, clear as water, which is contained in a sac. Henry observed such a tumor in a child of four years of age, which had suffered therefrom from its earliest years. It developed slowly without pain, together with a feeling of fluctuation; at the first attempt to remove it, six ounces of a clear fluid flowed out. Valker and Wutzer have described a similar case."

In the course of an interesting paper on the metal cadmium, in the *Journal of the Franklin Institute* for August, Dr. B. Wood, of Nashville, makes the following remarks on the properties of some of its alloys:—"As to the brittleness which cadmium is said to communicate when combined with any other metal, the facts are, *some* of its alloys, even with malleable metals, *are* 'brittle.' But others are highly tenacious and malleable. Its alloys with gold, platinum, and copper, afford instances of the former. Its combinations with lead, tin, and to a certain extent with silver and mercury, are examples of the latter. An alloy of two parts silver and one of cadmium is perfectly malleable and very hard and strong; with equal parts of each it is also malleable, but possesses less tenacity; but when mixed in the proportions of two parts of cadmium and one part of silver it is brittle. Equal parts of cadmium and mercury form a tough and highly malleable composition; in the proportion of two parts of the latter to one of the former, the amalgam is nearly equal in malleability, but possesses less strength. These mixtures are remarkable in view of the fact that most amalgams are exceedingly frail and brittle. A mixture of two or three parts of tin with one part of mercury is so fragile as almost to drop to pieces in handling; the amalgams with lead, bismuth, etc., are similar."

In the course of an instructive article on the estimation of silver, in the *Chemical News*, (May 19,) Mr. Frederick Field states that: "Mr. Napier, of the Mexican Mint, in two very interesting memoirs upon the action of heat on gold and its alloys with copper, and upon deposits in the chimneys of furnaces used for the fusion of the precious metals, communicated to the Chemical Society, (vols. x. and xi.,) proves very satisfactorily that on heating an alloy of gold and copper to the fusing point the volatility of the former metal is owing in a great measure to the presence of the copper, and from the analyses of the deposits in the chimneys there can be little doubt that a great part of the silver volatilized was evolved in combination with the same metal. From my own experiments I am convinced that the presence of copper exercises a most material influence upon the loss of silver in cupellation, and my ideas have been fully confirmed, not only by several French chemists, but by the very extended investigations of M. Domeyko, Professor of Chemistry and Mineralogy in the University of Santiago de Chile."

The journal just named says that "M. Bolley has noticed the existence of a soluble double silicate of lime and soda. This salt is formed when a solution of silicate of soda is added to lime water. It is amorphous, transparent, and, when heated, melts into a clear glass. Baryta and magnesia also form soluble salts with silicate of soda. These facts, the author remarks, are of much importance in studying the silicatization of stones, and have no less interest in connection with geology. They may also throw some light on the formation of the framework of vegetables."

The following account of a natural borate of lime is from the same source:—"For ten years, says the *Moniteur Scientifique*, a white salt has been imported from Chili, consisting of brilliant, silky crystals agglomerated into nodules of greater or less size. According to M. Salvetat, it contains twelve per cent. of boracic acid, and according to other chemists, fifty per cent. The other constituents are sulphate of soda, earthy matters, and sand. This borate of lime, according to its richness, may be used directly as a flux, and M. Salvetat has substituted it for borax in glazing Sèvres ware. He has succeeded in forming a glaze of good quality by melting together one part of this rough borate of lime, two parts of sand, and four parts of minium."

The employment of chromic acid is recommended (*ibid.*) as an efficient means to distinguish silver. Thus, "a solution of chromic acid or a mixture of bichromate of potash and sulphuric acid gives silver money, jewelery, or an alloy rich in silver, a purple red spot, due to the formation of chromate of silver. With the imitations of silver this does not take place."

BIBLIOGRAPHICAL.

Cassell's Popular Natural History.—We have received part 6 of this work, and its appearance gives promise of a very successful attempt to render the study of natural history more attractive to those who have neither the time nor inclination for a strictly scientific investigation of such an important branch of knowledge. It is profusely illustrated and cannot fail to afford entertainment as well as instruction. A striking feature which renders it more valuable to those interested in the comparative anatomy of the teeth and contiguous parts, is the separate delineation of the dental apparatus of the different animals, though the engravings are not so well defined as desirable for very extensive research. It is published in parts, on the first and fifteenth of each month, by Cassell, Petter & Galpin, 37 Park Row, New York, at fifteen cents per number.

THE

DENTAL COSMOS.

NEW SERIES.

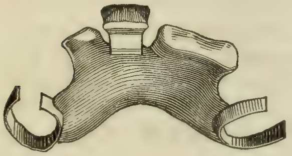
Vol. II. PHILADELPHIA, OCTOBER, 1860. No. 3.

ORIGINAL COMMUNICATIONS.

PRACTICAL HINTS.

BY J. D. WHITE.

We have often proposed directing attention to a very interesting practical fact, which has served our patients well, but for want of time has been deferred until duty compels us to give it attention. It originated with us, but if any other member of the profession has practiced it for more than ten years, he is entitled to the "*priority of discovery.*" All are well aware that, from a loss of the back teeth, the front teeth are brought hard against each other in masticating, and that in consequence of this undue contact, they wear away very rapidly, and sooner or later expose, in the majority of cases, the pulps. Now, to prevent this, we interpose a gold plate, to let the teeth strike on it instead of the teeth. We at first used pure gold, but it was too soft, so we substituted the usual quality of plate. A gentleman, well known to the profession, called to consult us about six years ago, complaining of deep and uncomfortable cavities or grooves on the posterior surfaces of the front incisor teeth. He had lost a number of his back teeth and was using the left canine superior, in contact with the inferior canine and first bicuspid for masticating; they wore rapidly, and this caused the front teeth to come in contact, and they wore also. His front upper teeth were very long, and fell far over the front lower ones, so that they struck the back parts of the upper teeth between the cutting edges and the bulge of those teeth near the gums. A deep groove was formed in them so as nearly to expose the nerves in the two front incisors and one lateral, the other being absent. Several teeth had been lost on the upper jaw; we proposed to supply them and a lateral incisor, and extend the plate over the worn surfaces of the other teeth, so as to protect them from further contact with each other in the act of mastication. The case has been a decided success. We at first thought that the contact of the lower teeth against the plate would cause them to wear also; but time has shown that this is not the case. We account for this by supposing that when the teeth come in contact with sufficient force, they disintegrate each other, and the surfaces become more or less rough and operate to produce the abrasion in the same way as if two bricks were rubbed together. We believe the precaution is taken, in the mechanic arts, where friction is unavoidable, that two substances of equal density are not brought together, in order to avoid consequent wearing. We give a cut here which illustrates a case where the six lower front teeth strike the four superior incisors and the anterior portions of the canines. The wearing of the upper teeth was so great, that the pulp of the right front incisor became exposed before there was any cementum thrown out to protect it, and the tooth had to be extracted, as the periosteum became so irritable. All the lower teeth behind the canines have been extracted for want of a proper appreciation of their importance. Many patients' mouths are ruined, simply because neither they nor their dentists care about preserving the back teeth. The plate here is allowed to extend over the worn surfaces of the remaining front teeth, and the abrasion is arrested. We have placed lower back teeth in this mouth also; we do this in many cases, and the advantages are very great. Do dentists pay enough attention to this?



(To be continued.)

THE ANATOMY, PHYSIOLOGY, PATHOLOGY, AND REMEDIAL TREATMENT OF THE FIFTH PAIR OF NERVES.

BY J. H. M'QUILLEN, D.D.S.

[Continued from page 88.]

THE marked resemblance between the spinal nerves and the fifth pair of nerves in their mode of origin by two roots, anterior and posterior, the ganglionic expansion upon the latter, the union of the anterior root with the inferior maxillary nerve, the division, subdivision, distribution and connection of the different branches with each other and with other nerves, and with the cranial sympathetic ganglion, having been described and illustrated, the next step is to consider the functions of this remarkable nerve.

To determine these functions, the most extended investigations and experiments have been made by numerous observers, among whom Sir Charles Bell, Magendie, Mayo, and Bernard have been the most indefatigable and successful. Although physiologists are united in opinion, except in some collateral details, there still appears to be some important points which cannot be regarded as definitely settled. Deferring the consideration of these points until they come up in proper order, it may be said in the beginning that the analogy between the larger or ganglionic root of the fifth pair and the posterior spinal root, and between the smaller root of the fifth and the anterior spinal root, affords a clue by which, with the present knowledge of the functions of the roots of the spinal nerves, it would be natural to infer that the larger consists of sensitive, and the smaller of motor fibres. The correctness of this inference is confirmed by the distribution of the different branches, by pathological conditions of the nerve in human beings, and by experiments upon the lower animals.

Thus, on tracing each of the three great divisions of the nerve, the ophthalmic and superior maxillary branches, which are composed of fibres derived exclusively from the larger root, are found to be distributed only to sentient surfaces, viz.: the integuments of the forehead, temples, eyelids, greater part of the ear, conjunctiva, Schneiderian membrane, mucous membrane of the mouth and upper part of the pharynx, and the pulps of the upper teeth, and are unquestionably the sensitive nerves of those regions. The *inferior* maxillary branch, in contradistinction to the ophthalmic and superior maxillary, by its union with the smaller root has two distinct sets of branches, one by which the muscles of mastication, viz., the temporal, masseter, buccal and two pterygoid, derive their motor impulse; and the other, distributed to the pulps of the lower teeth, integuments of the lower lip and chin, and the mucous membrane of the mouth and tongue, and supplying those parts with common sensibility. In addition, according to the generally received opinion among physiologists, the lingual branch is the nerve of taste for the anterior part of the tongue.

Of the pathological conditions illustrative of function, Sir Charles Bell cites a number of cases, in one of which a small sacculated tumor affected the roots of this nerve, so that the sensibility was destroyed in the parts to which its branches are distributed. In another case, in an effort to extract a tooth from the lower jaw of a gentleman, the inferior dental nerve was so much injured, that the half of the lip to which the nerve is distributed after emerging from the jaw was rendered completely insensible, and when he put a tumbler to his mouth, it felt as if a piece had been broken out. Precisely the same thing occurred in another case, from division of the infra-orbital branch of the fifth pair, which sends filaments to one-half of the upper lip. "A gentleman falling, a sharp point entered his cheek, and divided the infra-orbital nerve; the effect was loss of sensation, without loss of motion, in that half of the upper lip to which the nerve is distributed. The remarkable circumstance was, that this individual made the remark, when a cup was put to his lip, that they had given him a broken one. The part of the cup which was placed in contact with the insensible portion of the lip appeared to him to be broken off."

As the result of experimental observation upon the inferior animals, it is found, on irritating the ophthalmic and superior maxillary nerves, that a sensation of acute pain is induced in the parts to which they are distributed, but no convulsive movements occur. By division of the branches the sensibility of the parts is completely destroyed. On the other hand, if the electro-galvanic current is applied to the smaller or motor root of the fifth pair of an animal just dead, the most powerful action is excited in the jaws, which are snapped and ground together with considerable force.

This experiment, which is a very interesting and instructive one to witness, is quite easy to perform. Thus, immediately after an animal is killed, the cranium should be opened, and then carefully removing the brain, the ganglion of Gasser will be readily found; on gently raising this, the motor root of the fifth pair will be observed beneath it. Applying the electric current to this, the results already described will be readily obtained. The animals most easily procured for purposes of experiment are rabbits, cats, and dogs. Excellent and unobjectionable opportunities for prosecuting such investigations could no doubt be afforded in the slaughter-houses of beef and mutton butchers.

In addition to the satisfactory response obtained in the above experiment, which is not open to the objection of torturing the brute creation, a more objectionable operation to many, upon a living animal, affords the most decided and conclusive evidence of the function of this branch. Thus, when the inferior maxillary nerve is divided on both sides in a living animal, the lower jaw falls, from paralysis of the masticatory muscles. When the section is confined to one side, the parallelism of the jaw is lost, even in a state of repose, but particularly in the act of chewing. In addition to this loss of motion—which, by-the-by, is confined to the muscles of mastication, and does not include the superficial muscles of expression, as they are under the control of the portio dura—the sensibility of the lower part of the face and tongue and the sense of taste throughout the anterior two-thirds of the tongue are destroyed.

The fifth nerve may therefore be regarded as the sensitive nerve to that great surface, both internal and external, which comprises the anterior and antero-lateral parts of the face and head, and as the motor nerve of mastication. In addition to this, according to recent investigations of Bernard, a motor branch is given off to the parotid glands, which possess exclusively the power of stimulating their action. This branch is from the auriculo-temporal nerve, which is derived from the inferior maxillary.

The branches of the greater or ganglionic portion of the fifth pair, although formed of sensitive filaments exclusively, exercise a decided influence on the movements of the muscles of the head and face, and other parts to which they are distributed, through the numerous anastomoses which take place between these branches and the facial and hypoglossal nerves, and the nerves of the muscles of the eye. This is due to the fifth pair providing the muscles with that sensibility, without which the mind, being unconscious of their position and state, cannot voluntarily exercise them. Thus it may be an excitor to the facial, as in winking; or to the respiratory nerves, as when cold water is dashed in the face; or in sneezing, an act which is frequently induced in some persons by the impression made upon the branches of the fifth pair distributed to the eye, on passing suddenly into a bright light. All of these are instances of purely reflex action.

This naturally leads to the point, that one of the most important and peculiar features connected with the fifth pair is its influence over the organs of special sense. This appears to be owing to some connection between this nerve and the function of nutrition. For it has been frequently observed that in a brief time after complete paralysis, or division of this nerve, the power of all the organs of the special senses may be lost. They do not lose merely their sensibility to common impressions, for which they all depend directly on the fifth nerve, but also their sensibility to the several peculiar impressions for the reception and conduction of which they are purposely constructed and supplied with special nerves. The facts observed in these cases can only be accounted for by the supposition that the function of nutrition in these organs is under the influence of the fifth pair, and that when that nerve is injured, nutrition becomes deranged, and consequently interferes with the due performance of the special functions of the different organs.

Thus Magendie and Longet found that division of the fifth pair within the cranium of rabbits produced a decided effect on the nutrition of the corresponding eye, with, however, this remarkable difference: if, for instance, the division was made posterior to the ganglion of Gasser, partial opacity of the cornea alone followed; but if the ophthalmic branch was divided, anterior to the ganglion, a low, destructive inflammation ensued, within a period varying from twenty-four hours to a week, in the conjunctiva, sclerotica, and interior parts of the eye, and which, in the majority of cases, progressed until ulceration of the cornea and discharge of the different humors of the organ eventually supervened.

The great difference, resulting from these two experiments, has led physiologists to infer that a conjoint influence of the sympathetic and the fifth pair is exercised in the nutrition of the special organs of sense; and although the correctness of this position has not as yet been satisfactorily determined, the connection of the ophthalmic, spheno-palatine, otic, and submaxillary ganglia, with the three great divisions of the fifth pair, and the fact that each of the ganglia send off branches which are distributed to the different organs, gives more than an air of mere plausibility to it.

The intimate connection between the sense of sight and the fifth pair is shown in frequent cases where total blindness has followed injury of the frontal nerve as it emerges from the supra-orbital foramen; although in some the blindness ensues immediately as if from concussion of the retina, in others it comes on so gradually and with a low inflammatory disorganization, followed by atrophy of the whole eye, that it appears to be due to defective nutrition.

As already stated, the fifth pair exerts a controlling influence over all the organs of special sense, and it is not alone the sense of vision that is impaired or destroyed in injury or division of the fifth nerve, but the sense of smell, of hearing, and of taste may be affected by the same cause.

Thus the olfactory nerve and the nasal branch of the fifth pair are distributed, for example, to the Schneiderian membrane of the nasal passages; the first, according to physiologists, to endow it with the special sense of smell; the second to supply it with common sensation. It is asserted that after destruction of the olfactory in the lower animals, the power of distinguishing odors, properly so called, is lost, but the Schneiderian membrane remains susceptible to the action of acrid vapors, such as ammonia, horse-radish, mustard, etc. These, however, merely act as irritating substances, affecting the mucous membrane in the same way that they would any other part endowed with general sensibility. After division of the fifth pair, not only is the general sensibility destroyed, but the power of smell is also lost.

In opposition to the above almost universally received opinion among physiologists, Magendie inferred from experiments upon dogs, that he had proved that smell continued after the olfactory nerves had been destroyed. He found, for instance, that a dog which survived division of the olfactory for a considerable period, when food was offered to it rolled up in paper, would unroll the paper and expose and eat the food, taking no notice at the same time of other packages containing blocks of wood. These experiments have been rejected as valueless; but within the past few years Claude Bernard has cited a case where there was a congenital deficiency of the olfactory nerve, which, if the statements of the persons from whom he obtained his information are to be relied upon, goes far to strengthen Magendie's opinion that the fifth pair, rather than the olfactory nerve, is the seat of the function of smell.

The case referred to, which may be found in Bernard's works, and in Lewis's Physiology of Common Life, though, strange to say, it has been entirely overlooked by the systematic writers on physiology, came under Bernard's notice when he was Magendie's assistant at the College of France. A woman who had died of consumption was selected by him as a subject for dissection; on opening the skull and removing the brain he was surprised at not finding the slightest trace of the olfactory nerve. That this was not a case of absence from disease, but of congenital malformation, was proved by the fact that in all other respects the brain was of the normal structure, the origin and distribution of the different nerves being perfect and regular, with the exception of the olfactory, of which neither the bulb nor nerve was present. Two engravings, representing the brain and the base of the skull—which are still preserved in the College of France—are presented in Bernard's works.

The singular phenomena presented in this case excited Bernard's curiosity, and without giving any clew as to the object of his inquiry, he visited different persons with whom the subject (Marie) had been on terms of close intimacy during her life, and found, in response to his inquiries, "that the odor of tobacco proved insupportable to her, and that, on entering a room in the morning where any one had been smoking over night, her first act was to open the window to let out the smell of the stale tobacco; that she frequently complained of the fetid smell of a closet which was near her room; that she was fond of flowers, and always smelled of them;" and, in fact, that her likes and dislikes, with regard to pleasant and disagreeable odors, were as decided as those manifested by persons generally. From this testimony, which Bernard regards as reliable, it is quite evident that the sense of smell was possessed by the individual, and "as the olfactory nerve was absent and the other nerves were in a perfect condition, it appears to be strong corroborative evidence that the filaments of the fifth pair distributed to the Schneiderian membrane served the function of smell, as those which are furnished to the tongue serve the function of taste."

As Bernard suggests, the most reliable experiment that can be performed to determine the relative power of the olfactory and the fifth pair, in the sense of smell, would be to select a well-trained hunting dog and remove the olfactory bulbs, and then, after a sufficient period had elapsed to enable the animal to recover from the effects of the operation, to employ him again in field sports. If, after such an operation, the function still remains, there can be little question that it must be due to the impressions made upon the fifth pair.

Leaving this as a question to be determined by further investigation, and passing to the lingual branch of the fifth pair which is distributed to the anterior and lateral parts of the tongue, it may be stated, after much discussion of the question, which is the nerve of taste, the glosso-pharyngeal or the lingual branch of the fifth pair, physiologists have almost unanimously arrived at the conclusion that both nerves are concerned in this function; the first supplying the posterior third of the tongue and soft palate, and the second the anterior two-thirds of the tongue with the function of taste.

These conclusions have been adopted after numerous experiments, in which the loss of the sense of taste and of common sensation in the anterior part of the tongue followed immediately after the division of the fifth pair, or its lingual branch; while it still remained in the parts to which the glosso-pharyngeal nerve is distributed.

Of the branches of the fifth pair, which are distributed to the upper and lower teeth, five or six filaments are sent into every fang; these ascend and form a rich plexus in the upper part of the pulp by gradually breaking up into fine primitive fibres. According to Tomes, these fibres pass into the dentinal tubuli. Although this discovery is in accordance with a hypothesis long entertained, it has not, as yet, been thoroughly confirmed by other microscopists.

It is of course well known, that the presence of the nerves in the tooth pulp endows it with that keen sensibility which characterizes that structure, and that the exquisite sensibility which is sometimes observed in dentine has been accounted for by the supposition that filaments of the nerve pass into the dentinal tubuli. In addition to this, in a former communication on the "Absorption of the Fangs of the Deciduous Teeth," the suggestion was advanced that the fifth pair of nerves had considerable influence over the nutrition of the dental tissues; and reasoning from the facts afforded by experiments, in which the nutrition of the special organs of sense had been affected by division of the fifth pair, it was inferred by analogy that the absorption of the fangs of the deciduous and the development of the permanent teeth was more or less dependent upon nervous connection.

(To be continued.)

CONTRACTION OF ZINC.

BY T. L. BUCKINGHAM, D.D.S.

I SUPPOSE all who have inserted artificial teeth will admit that one of the most difficult operations in dentistry is to make plates that will fit the mouth perfectly.

In order to make plates the exact size and shape we require them, we should have our metallic dies perfect models of the mouth; if they are smaller, the plates will unavoidably be smaller than they should be.

Now, unfortunately for us, the metal we use, more than any other, for making dies contracts very much in casting, (I allude to zinc,) and we know no other metal that answers our purpose as well. We have some alloys that answer tolerably well; but there are objections to alloys that cannot be urged against a simple metal.

I have recently been trying some experiments in casting zinc. There is but one important fact which I wish to point out at present, and that is the amount of contraction that takes place. As far as I know, this has never been determined; and as it is a matter of very great importance to those who insert teeth, I think we should know, as near as it is possible to know, the amount of the contraction, so that we may take some means to remedy the effect of it.

According to my experiments, a bar of zinc, five inches in length, contracts in casting $\frac{1}{18}$ of an inch, or the $\frac{1}{90}$ of its length. This is a little more than is usually allowed in zinc castings. I have been informed by a person who casts large quantities of zinc for various purposes, that he has his patterns made $\frac{1}{8}$ of an inch to the foot larger than he wants his castings to be. This is allowing less for the contraction than I have made it, being only the $\frac{1}{96}$ of the length.

In estimating the contraction I do not take into consideration the settling in the centre on top of the cast, which we see when the casting is made in an open mould, as we usually make them, but the contraction that takes place on the surface that is intended to be used.

Now, allowing an ordinary sized cast to be two inches across and two and a half inches in length on the surface where the plate is to be made, we have a contraction of the $\frac{1}{45}$ of an inch across and the $\frac{1}{36}$ of an inch in length; but we must bear in mind that the cast is not this much smaller than the mouth, for we have had an expansion in the plaster cast of $\frac{1}{4}$ of this amount. Zinc contracts four times as much as plaster expands.

The contraction in the zinc cast, in some cases, do very little injury, and perhaps it would be better to have the plate a very little smaller than the mouth, when it is flat and soft, or spongy; but in cases where the alveolar ridge is prominent and hard, or has knotty projections upon it that are hard and the other parts are soft, we want plates just the exact size and shape. If any allowance is made, they should be large enough on the hard parts, or smaller on the soft; but in making plates the reverse of this takes place, for the most prominent parts on the casts are driven down most in swagging.

THE PROFESSION IN ENGLAND.

[FROM OUR LONDON CORRESPONDENT.]

Some months have elapsed since I last addressed a communication to the Dental Cosmos, not that events of importance have been wanting to dentists in the Old Country, but our professional journals are so readily transmitted to America that I have feared I could only furnish you with information second-hand. Reflecting, however, that many of your readers may have no opportunity of seeing British professional publications, I once more address you, as just now we have here various topics of interest on the *tapis*.

First, I ought, in justice, to mention that the completion of the first volume of the Dental Cosmos has called forth the best wishes toward your excellent publication from all who have perused the several numbers. The success you have achieved in bringing together, at frequent intervals, a mass of useful and practical information must indeed be to you a source of gratification, while the ability and independence with which professional politics have been discussed are none the less influential from the complete absence of offensive personalities. Your example might well be followed in a quarter not a hundred miles from here, and then we could reasonably hope that the unfortunate dissensions which have characterized our reformatory proceedings would before long be consigned to the limbo they ought to inhabit for all time.

For more than three years past a bitter spirit of hostility has been too apparent in the political department of a journal opposed to the organization of the profession in England on an independent basis. This spirit of bitterness appears to have extended to every person who has been of service in the establishment of the College, and has only been kept just within legal bounds by the fear of having to pay the penalty of defamation. In this it was successful for a time, but at last justice has, in a measure, claimed her due. Several months back, Mr. J. D. Morrison, dentist of Edinburgh, (a member of the College of Dentists,) patented an improved process for the application of congelation in the extraction of teeth, and he advertised the fact in the local papers, whereupon a libelous article appeared in the *British Journal of Dental Science*, in which Mr. Morrison was alluded to in terms the reverse of complimentary. Mr. Morrison tried to obtain the name of the writer, whom it was supposed was a neighboring dentist, but the publisher refused to give up the name or publish an adequate apology. An action followed, which was completed on the twenty-first ultimo in the Scottish "Court of Session," when, after a lengthened trial, a verdict was returned against the *British Journal of Dental Science*, with £100 damages—this, with expenses amounting to probably another £200, should prove a warning, although it is to be deeply regretted that high moral feeling on the part of a professional writer should not render such restraint as the law provides unnecessary.

A new journal, to be published once a week, under the title of *The Dental Examiner*, has been announced for publication. According to the prospectus, this journal will be conducted on independent principles, and all sorts of good things, in the dental literary line, are promised to the subscribers. I hope it may prove an impartial organ, and, by avoiding vulgarity of sentiment in its politics on the one hand, and providing original useful information on scientific subjects on the other, an organ of value to the profession will be established. If, however, it should become apparent that *The Dental Examiner* is only another of the many sinister means which have been brought to bear against a legitimate organization of the profession, it will, as sure as fate, prove one more source of humiliation to a contemptible clique. Let us hope for the best, but we must remain prepared for any and every exigency in these troubled and treacherous (alas, *how* treacherous!) dental times.

I would commend to the notice of your readers a very valuable essay, commenced in the July number of the London *Dental Review*, on the

"Teeth and Maxillary Bones in the highest forms of Quadrumana, considered in relation to the same structure in the Human Class." This essay is by a distinguished writer, and displays ability of description coupled with a complete mastery of the subject handled.

The ensuing session of the College of Dentists of England promises to be one of considerable interest. The custom of previous years will be adhered to in regard to lectures, and I have heard it mentioned that two dentists of high repute are likely, as lecturers, to give the members the benefit of their views on important practical questions. The names of the gentlemen alluded to are Mr. R. T. Hulme and Mr. Robinson. It seems that the monthly meetings are to be revived in a modified form. The Council have enough to do in arranging the educational matters connected with the College, but, to meet the wishes of many members, I believe it will be found that a separate committee will be appointed to conduct the monthly meetings; and if this be carried out, it may safely be predicted that a large amount of benefit will accrue in the shape of information gathered from all parts of this, and perhaps other countries.

The "certificates of membership" of the College have recently been issued to the members. These documents are well got up, and are judiciously worded.

The "Metropolitan School of Dental Science," in connection with the College, has announced its programme for session commencing in October. I observe no change in the professorships. The popularity of the school during its first session augurs well for its future career. Two thousand eight hundred and sixteen legally qualified medical men have signed the following declaration:—

> "We, the undersigned, are of opinion that the principle of making dentistry a medical specialty, by virtue of a certificate from the College of Surgeons, is contrary to the interests of the medical profession, and that the organization of the dental profession will be best accomplished by an INDEPENDENT INSTITUTION emanating from and governed by dentists themselves."

In the face of such an unparalleled expression of opinion, it requires not a prophet to tell what the dental certificates of the College of Surgeons will be considered worth either by the profession or the public. As regards their effect upon dentists, they may be looked upon as "chips in porridge," doing neither good nor harm. The time *must* come when the most obstinate anti-college men will remember their opposition to independent organization with very little satisfaction. One thing to be pressed upon the attention of outsiders, in order to hasten this consummation, is the fact that the government of the College is practically vested *in the profession,* for the Council are elected by and from among members of the College—any member being eligible for office. This constitutional arrangement only requires to be thoroughly known, and the animus of the silly taunts of opponents, as to the Council being a "self-elected" body, will at once be exposed.

It has been decided to hold an international great exhibition in London in 1862. I hope the opportunity will not be lost of cultivating a more intimate friendship between dentists on both sides of the Atlantic; but some on this side sadly need a little more of the "milk of human kindness" to enter their constitutions ere then, if the meeting is to take place, as it should do, in a spirit of universal generosity.

An action was lately brought, in this metropolis, by a dentist, Fresco by name, against an attorney who had previously been engaged in a case against him, and who, when so engaged, made public statements which he subsequently failed to prove. The lawyer had to pay £450 damages. With all the facts of this case before me, I may say that I think the lawyer was served right; but, if the verdict had gone the other way, I could hardly tax my good nature to the extent of sympathizing with the plaintiff.

LONDON, 1860.

ON THE MODUS OPERANDI OF DEATH FROM CREOSOTE.

BY W. H. ATKINSON, M.D.

HAVING been cognizant of a few deaths by creosote, I have been led to consider its mode of operation upon the living economy. The comparative rarity of deaths from this agent being the cause of our want of demonstrative means for the proper understanding of this subject, and feeling that something to attract attention in that direction might not be out of place in the pages of the DENTAL COSMOS, I offer a few sentences in relation thereto in the hope they may do good.

The specific action of this agent in producing death, as yet, has not been satisfactorily explained—if, indeed, it can ever be. There is something so occult in its *modus operandi* as to elude even profound investigation. It, indeed, simulates the most prompt and virulent poisons, acting apparently upon the life forces through the nervous track (possibly ganglionic or sympathetic system) so pertinaciously, that antidoting is out of the question by any known means.

Like most, if not all, of the virulent poisons, it, when properly attenuated and combined, exerts a most salutary and curative effect, especially upon the mucous surfaces.

Such deaths suggestively point to the probability of the vital principle being in some way connected with or controlled by some form of what is now called electricity; if not, indeed, a mode of expression adopted by this inexplicable presence. The immediate mode of death, or the part that yields first to the destroyer, so far as known, has not been observed—some cases dying by enervation and others by choking, producing true asphyxia, as in croup or stridulous forms of death. No case has lived long enough to die from the effects of inflammatory action.

The law by which electricity sustains life in organic bodies renders it *possible* for it to do so only in equable and gentle, not voluminous currents, clearly expressing itself as modified by the native incapacity to conduct and distribute the subtle influence in more than this certain measure, proving deleterious or destructive in the degree of quantity that is passed over the track in a given time at a given temperature and impetus—chronothermalicity always being active as a modifier in organic bodies.

FLANGING PLATES.

BY GEO. M. COLE.

As I do not remember seeing, of recent date, any article on this point in any of the journals, allow me to communicate my method, and if you deem it worthy of publication, it is at your disposal. To put on a nice flange or rim, as it is called, has long been a desideratum with a portion of the profession with whom I am acquainted, and if, by adding my "mite," will aid them in so doing, it will accomplish all the writer desires.

After you have ground on your teeth and arranged them as you desire, grind the tops of the gums (one tooth at a time) off, at an angle of about forty-five degrees, a line from the top of the plate; then take a little wax on the point of your knife, and fill up the little interstices, if any there be, between the *teeth* and *plate*, so as to form one smooth shoulder, and not let the plaster run into these places; then take a thin strip of wax, about the width of one of the front teeth, and place it around on the inside of the plate, so as to round your mould above your plate, to form a shoulder to lay your solder on, and also to clamp well; now imbed your teeth in plaster poured on a piece of glass, deep enough to hold them firmly in their places, and let it spread out two inches, for a floor for your other mould to be poured on; let it harden enough to trim up smooth around the teeth, and varnish it; then oil, and place a thin piece of pasteboard or Daguerreian plate between the front incisors, to separate the mould; let it come up as high as the strip of wax on the inside of the plate, and that will support that end; then drop a little wax on the other end, (each side,) and that will hold it firm enough to separate the plaster mould. Mix up your plaster thin enough to get all points perfect, and pour it around the teeth, and let it harden; then turn the mould's top sides together, and they will present about the shape of the capital letter X. After trimming a little, set them down into plaster together, turn and shape them for moulding, and you have both in one cast. Get up the dies in the usual way. It is always desirable to trim them, (the top sides,) and fetch them as close together as possible without injuring the cast, so that it will not take any wider piece of plate than possible. Now roll a piece of plate as wide as the cast and a trifle longer, very thin, (35 gauge plate,) and swedge up, cut it in two in the centre, lengthwise, and you have them ready to adjust to your plate in two pieces. Now warm your plate over the lamp, holding it with the tweezers, and it will loosen from its bed of wax; clean it well, and wet it before putting it back, and it will not adhere to the wax; as you wish to remove it quite often, then clamp on one flange at a time, (be sure it is to its place,) remove it to your charcoal, or whatever you use for soldering on, heat it a little, so that the borax will adhere, then take a lump of borax and put it on along where you want your solder to flow, wet it with a small stick dipped in water, that will flow it down nicely, lay on a small piece of solder and tack it, try it on, and if right, remove, and lay on your solder in small, long pieces, instead of square ones, and heat up slowly, and flow your solder down nicely, so that you can see it on the under side; do the other the same way; let them lap in front enough to solder well; with a little care, you can cut the flange so as to bend a piece up around the last molar, and when you back that tooth make your flange and backing lap, and solder it when you solder on the teeth to the plate, trim it off down to the plate, and you have all that can be desired in the way of flange.

As this article is quite lengthy, I will not attempt to describe its advantages over the common way of flanging plates, but leave it with the intelligent dentist to judge of its merits for himself.

DETROIT, MICH.

PROCEEDINGS OF DENTAL SOCIETIES.

PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

REPORTED BY GEO. T. BARKER, D.D.S.

A MONTHLY meeting of the Association was held on Tuesday evening, September 11th, 1860, at half-past eight o'clock.

President, Dr. Dillingham, in the Chair. Present, Drs. Flagg, McQuillen, Fitch, Garretson, Van Osten, McGrath, Roberts, and Barker.

The subject of discussion being

"THE EFFECT OF MEDICINAL AGENTS (CONSTITUTIONALLY ADMINSTERED) UPON THE TEETH,"

was opened by Dr. Barker, who said the subject was one he considered worthy the attention of the dental and the general practitioner of medicine, but, unfortunately, both had as yet given it but a limited examination. During the last century active minds have been seeking to ascertain the exciting and predisposing causes of caries, and at different periods various theories have been advanced to account for this condition. Some, looking only at the constitutional causes of decay, have claimed they alone were the exciting agents; others very justly have directed attention to the laws governing chemical affinity, the hereditary traits, defective structure, and the action of external decomposing and corroding agents. It must be confessed, however, that any of these theories, if adopted singly, will not account for the carious action in different cases; and considered each must be received as correct to give a true solution.

A frequent cause of caries is, no doubt, due to the administration of remedial agents, and to a few of these would direct attention. In certain diseased conditions of the system, if at all protracted, we well know there is a modification of the life forces, a loss of tonicity and a degeneration in the different organs, with a deficiency of the calcareous elements of the blood that go to repair the osseous structures. Again, in certain diseases we detect an excess of the inorganic, and a deficiency of the organic constituents in tooth structure. If, during such a condition of the dental system, any of the medicinal agents that have an affinity for the earthy elements are administered, it is but fair to presume that the action upon the teeth would be most destructive, exciting them to caries, and acting too with much greater force than if they were in a normal condition.

It was not unfrequent to meet with patients who, having just recovered from protracted sickness, present themselves for dental treatment with teeth badly decayed that previously were sound and perfect. He considered this condition, though often due to a loss of vital force and an inadequate supply of nutritive material for the repair of these organs, was yet frequently caused by the medical practitioner, who, when administering the acid tonics possessing an affinity for the inorganic constituents, neglected to furnish and impress upon the patient the great importance of an alkaline wash for the mouth as a preservative to the teeth. He thought this neglect was not surprising, as the United States Dispensatory, and the usual text-books that were used for instruction on the administration of medicines, were entirely silent upon this subject. It was, therefore, the duty of the dentist to direct attention to this important subject, and impress its faithful performance upon every general practitioner.

He had performed a few experiments upon sound teeth with the different acids in common use, which he would exhibit to the gentlemen present. Would briefly refer to the medicinal uses of Sulphuric acid,* and then refer to its effect upon the teeth. It is in common use in the preparation known as the *acidum sulphuricum aromaticum*, it is also used diluted as a tonic, antiseptic, and refrigerant. In the management of diarrhœa, uterine hæmorrhages, and profuse sweating, it is considered of much value. The teeth presented to notice were subjected to the action of dilute sulphuric acid (SO_3, gtt. iv, water, ℥ij) for six hours, at which time they were removed. The remaining enamel, as plainly seen, is soft and chalky, while a considerable portion has been destroyed.

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* The acids used in his investigation were of what is termed commercial strength.

Tartaric acid was next tested. It is present in the juices of all the acid fruits, and particularly in the grape. It is also used in medicine for the preparation of acid, refrigerant, and effervescing draughts in sickness; is also present in Soda and Seidlitz powders. Two teeth were placed in a solution composed of Tartaric acid, ʒi, water, ℥ij, they were allowed to remain forty-eight hours. A deposition of Tartaric acid crystals was thrown down, and the enamel considerably destroyed.

Vinegar, or dilute Acetic acid, as is well known, is in common use; it is administered in inflammatory fevers as a diluent drink, and acts as a refrigerant and a diuretic. It is also used as an astringent and a tonic, and is useful in arresting the night-sweats of pulmonic consumption. Young ladies with a tendency to obesity have been known to take large quantities to produce leanness. Two sound teeth were subjected to the action of a solution composed of one ounce of vinegar to one ounce of water, and were allowed to remain forty-eight hours. The enamel, though blackened, does not appear to be destroyed, but thought it might be found so if critically examined; the cementum is also much discolored.

He next spoke of Citric or lemon acid, which is administered as a drink in the treatment of fevers and rheumatism, it is recommended for the cure of acidity of the stomach, and is in general use in the pleasant drink of lemonade. It is also used at sea in large quantities on long voyages, to prevent scurvy. Its action is that of a refrigerant. Two sound teeth were subjected to a solution composed of citric acid, ʒi, water, ℥iss, and allowed to remain forty-eight hours. On their removal, the enamel was found completely destroyed, a considerable portion having floated and settled upon the cementum.

Nitric acid was next tested. It is administered as a tonic and expectorant. Is used, largely diluted, as a drink in typhus fever, and as a remedy in hooping-cough; and has been recommended as a valuable local remedy in cancrum oris. Two teeth were placed in a solution composed of nitric acid, gtts. v, water, ℥ij, and allowed to remain eight hours. On removal, the enamel was found greatly destroyed. Would remark, the best wash for the mouth after the administration of this acid is a solution of the carbonate of soda.

Hydrochloric acid was also tried. It is used as a tonic, refrigerant, and antiseptic; is administered, largely diluted, in low fevers, and to counteract phosphatic deposits in the urine. It is used in combination with other articles in forming gargles in the treatment of ulcerated sore-throat and scarlatina maligna. Three teeth were subjected to a solution composed of hydrochloric, acid gtts. x, to water, ℥i. The calcareous elements were found on examination, six hours afterwards, to be almost entirely removed.

He remarked that these few experiments must convince us of the importance of alkaline washes after the administration of any of these acids. Before taking his seat, would briefly refer to the action of mercury upon the teeth and surrounding parts. Richardson considers the pitting which is observable in children's teeth, and which has been attributed heretofore to the influence of exanthematous diseases, to the action of this agent. At this time, when so many heedlessly take quack remedies, it is not rare to see cases of ptyalism before the patient is at all aware of its existence; such cases fall first into the hands of the dental practitioner, and he should be prepared to properly treat them. The breath of the patient, salivary secretions, and spongy appearance of the gum, usually cause its insidious advances to be readily detected. The effect of mercury upon tooth structure has been for many years an undecided question, but without doubt the teeth of children are greatly injured by its use, and those of adults more or less so. The effect seems first to be upon the gums, and, gradually proceeding to the end of the fang by means of the periosteum, the teeth are loosened; and though, upon the establishment of a healthy condition, the teeth will again become firm in their alveolus, the gums will sooner or later recede from the teeth until they will drop out of their sockets. He would close with an allusion to an interesting case which came under his notice a short time since. A young girl, six years old, was salivated until sloughing of the alveolar process was induced. The process containing the deciduous left inferior canine and molars came away, bringing the germs of the two permanent bicuspids and first molar with them. Such cases were most unfortunate, and showed the importance of its careful exhibition.

Dr. Garretson remarked that he had somewhat misunderstood the question selected at the previous meeting, thinking the subject was The effect of certain constitutional conditions upon the health of the teeth. Having prepared a few thoughts on that subject, he would, if agreeable, present them.

He thought no more expressive proof could be given of the rapid advances being made by the dental specialty, than a reference to the class of subjects now engaging the attention of the profession; and remembered that it had not been more than ten years since, even in the Pennsylvania Association, the discussions never took any range that led outside of the oral cavity. Caries was caries, and there was no cure but in mechanical manipulation, and no prophylactic treatment but the tooth-brush. Dentistry even then had, happily — though, perhaps, unjustly and unmeritedly— gained some recognition as a scientific pursuit; and this, perhaps, because of the advance which it had made on its previous ten years. I say happily, because this growing recognition, as in the case of general surgery, was instrumental in ousting the mere tooth-puller, and supplying his place with the D.D.S. of to-day. Then, the possession of a key of Garrengeot made the dentist; now, it is a three years' course of study and a college curriculum as difficult to surmount as, I think, will be found in most of the medical schools. It is for the public as well as the dentist to congratulate itself on the state of its protegé. Here we are met together to-night to consider, not the treatment, but the cause and prevention of dental caries; and if we can progress in this department as thoroughly as we have in the mechanical and operative departments, we shall have perfected ourselves in all that relates to local dental surgery. We may then be able to call it an exact science.

Dental medication is general medication. Several years ago I said on the floor of this room, that it would be compulsory on the part of the professors of our dental colleges to suit the curriculum of their institutions to this growing requirement. I do not forget, gentlemen, the reception my doctrines then met with. We have grown somewhat in stature since then; we are growing rapidly now from month to month. I remarked at that time, that I could not understand how the aurist and oculist could be successful without the abilities of the general practitioner. And as I entertained a respect for the dentists equal to that of any special surgeon, I could not understand how he alone, of all the specialists, could hope for the greatest success, possessed of only a local knowledge or an ability to treat a cachexia only at the point or periphery at which a cause exhibited its effect. But the good dental graduate of to-day is almost as well qualified to practice medicine as dentistry; and, gentlemen, according to my views, he should be quite as able; and I have little doubt, judging of the future by the past, that he, after a time, will be as fully qualified. You, who are as familiar with private teaching, with clinics, and hospitals, as I am, must have been struck with the number of dental students constantly met with at such places. I am sure four-fifths will be found so engaged in the hours not devoted to their own lectures. Does not this suggest that we are not even yet giving them as much as they can digest? If we look at dental classes as in the winter they assemble in the colleges, and compare them with the classes of our medical schools, we will not have to ask ourselves the second time why they thus cry for more—it is indeed due to the growing intelligence of the profession. If, gentlemen, to-morrow I should have two students enter my office, one with the intention of reading medicine, and the other dentistry, the only difference I should make would be, that when each had finished the same medical studies I would conceive my dental student ready for the manipulative or mechanical department of his profession, while the first would be ready to go forth. Theory first, practice afterwards.

Neither should we consider their educations finished, for as science advances so must the practice of a profession advance with it. At this very moment Europe is divided on Virchow's new doctrine of life as the result of cell segmentation. It would now seem as nonsense to talk of a blastema and the spontaneous evolution therefrom of cytoblasts. The embryo develops by the segmentation of a single cell; the alveoli, on the extraction of teeth, are filled up by the same process of segmentation. We hereafter have nothing to do with lymph as a reparative agent; we must cure our patients by exciting one of the three functions of a neighboring part. We attribute dental caries to acidity, and heretofore we have been satisfied in considering the acidity as we find it in the mouth. We have not, as a class, asked ourselves the nature of these acids, or to what is their production due. We have underrated our position in giving too wide a scope to the general practitioner, and limiting too much our own. When, years back, before this Association I have spoken of anæmia, chlorosis, and kindred conditions as the source of dental caries, I have been met with rebuke for traveling outside my profession. Let me now, gentlemen, add my mite to the experience of to-night by affirming that I believe I have saved more teeth by constitutional treatment than ever I have through manipulation. And if I could exhibit to you my practice, I would offer it in proof of the assertion. I could point happily to many cases where, when the patients first came into my hands, the tendency to caries seemed a cachexia; and where, under treatment, this cachexia has seemed to wear out, as does fire when unsupplied with fuel. I have the satisfaction of saying I could show you many such cases. And why not? Has not every one of us seen sets of teeth perfect up to some certain date, an attack of fever perhaps, or pregnancy, and then, under a constitutional change, at once succumb? Has not every one of us met with sets of teeth where our art seemed set at defiance? I know I may answer for all in the affirmative.

If, then, I am asked what these constitutional deteriorations are, I can only answer by referring you to the physiology of animal life, and to conditions modifying physiological action, or perverting such action to the pathological. Thus I may allude to the circulation of the nutritive, or life-supporting force, and may pronounce such circulation physiological when an equilibrium is preserved, both as concerns the relative quantities and qualities of constituent particles and pro rata distribution. Thus recognizing this normal condition of blood and its office, I acknowledge a pathological condition in what Dr. Wood describes as inflammation, "a perverted condition of the circulation of a part, attended with heat, redness, pain, swelling, and a modification of secretion and nutrition." If I would make an analysis of its constituents, I may discover a deficiency in red corpuscles by looking in the face of my patient; I may see deficiency in, or excess of, fibrin, by watching the clotting blood; I may notice deficiency or excess of water as the blood flows from the cavity of an extracted tooth; I may note the excess of albumen in my strumous patient, not critically of course, but to the practical advantage of my cases; pathological conditions may be induced from the fluids to the solids, or, firstly attacking the solids, may thus indirectly affect the fluids. Thus, in the one case we have dental caries as the result of a constitutional deterioration of the muco-oral secretions. And to get an example from our peculiar domain, we have dyspepsia and its train of evil associations as a result of dental caries.

Mucus is the secretion, as we know, of numberless glands distributed through the alimentary canal. In health mucus may be denominated neutral, its capacity for deterioration may be marked by noticing the difference between the pearly and watery character of that which is eliminated by the healthy follicle, and the sordes of the febrile condition. Deteriorated mucus is always more or less acid in its reaction. The effect of this acid mucus on the teeth is evident to all those who are familiar with the matter through clinical experience, or general practice. I have nothing to say of it as an entirely local condition, but shall briefly refer to it as a constitutional condition. In various of the exanthemata, in bilious remittent, in all typhoid forms of fever, the production of this watery deficient mucus gives us the sordes of the books. As I remarked, it is in itself most eroding, but there is from it an indirect effect in the formation in the mouth, through its presence, of nitric acid. You ask me to explain the manner of this production. Sordes is an organic body having the nitrogenous element in excess; in its decomposition, which is going on so long as it continues to be produced, it liberates its nitrogen; this in turn indirectly combines with its equivalent of oxygen, yielding nitric acid as the result. Yet, if objections are urged considering the known difficulties in the way of this union, we have only, to convince ourselves, to take a portion of the sordes and fluid of a febrile mouth and subject it, after neutralizing it by potash, to either of the tests given by Taylor in his Toxicology, particularly the last one, as found on page 188 of his work. You will recall the mention made by Professor Harris, in which Dr. S. R. Mitchell gets nitrous acid from the decomposing nitrogenous substance found between the teeth.

Another source of dental diseases is, I incline to believe, occasionally due to a relaxation of the tonsil glands. These glands, as we know, are situated between the arches of the fauces, and their eliminations are under the control of the will, that is, I mean we can swallow or eject them at pleasure. The glands are lobulated, and in a relaxed condition afford lodgment in the interstices of the lobes for particles of food. The decomposition of the animal and vegetable matter is always considered in a diagnosis of foul breath, as we will remember. The acid reaction of this constantly decomposing material, when such condition exists, must surely act on the teeth, coming as it does in contact with them, the irritation induced in the fauces causing the patient first to hawk the fluid into the mouth that he may spit it away. The acid formed would, I suppose, be sulphurous or sulphuric, according as a full saturation of the base might or might not take place; or, if the lodged particles partook more of a strictly nitrogenous diet than of the usual mixed food of the omnivora, nitric acid might as easily be the result; the production of sulphuric acid would cause greater irritation of the fauces, because of its affinity for water.

The tonsil glands are very easily seen by depressing the tongue, and such a condition as just mentioned would be very easily discoverable. Perhaps the best local treatment would be found in touching the parts occasionally with a weak solution of chloride of zinc, or in the use of gargles of a stimulating character. Any constitutional treatment required would be, of course, influenced by the disease or condition.

I will refer very briefly to caries as influenced by the strumous cachexia. That caries is a common attendant upon this condition is made evident by the examination of any case; the teeth of such patients are found of that dull, lifeless white, making our art valueless, as we need not attempt to save them by operation, unless the cachexia is first removed. As remarked by Dr. Wood, in his "Practice," "a knowedge of the causes which favor the development of the disease may aid us in somewhat understanding this." These causes are almost all of a character fitted to lessen the energies of the system and impoverish the blood. Of course, the ill effects produced on the teeth are secondary, the result of deteriorated blood and secretions; you find the caries to partake of the humid character, and to give off in its progress an offensive odor, showing the preponderance of animal matter in the teeth. When scrofula attacks the adult, you will find the teeth, if pearly, losing their translucency and becoming opaque. Here is a direct evidence of a blood disease, or blood impoverishment, and with such an opponent is it not simply preposterous to suppose that, as the dental specialty is concerned, it performs its part when a pellet or two of gold is inserted in the tooth or teeth affected? I will not say we must treat the patient constitutionally, but I will say the case can only be treated successfully in such a manner. It will be answered that teeth in which the animal matter preponderates should be the most capable of resisting decay. This would be true, if it were not for the blood deterioration alluded to; the scale of vitality is lowered, and the very deterioration affecting this loss of resistance gives power or destructive force to the attacking agent, thus demonstrating the view I have so often advanced, that caries is both of the tooth and out of it.

The scorbutic habit or cachexia has an important bearing on dental, or rather medico-dental practice. I do not allude to that extreme condition of the disease described as occurring among sailors on long voyages, but to the modified condition, as seen in almost every-day practice. The disease, as I would describe it, is one in which the blood is depraved, a tendency to subacute inflammation, local congestion, passive effusions, exhibiting its existence markedly in the gums, which are passively congested, presenting a dull, relaxed appearance, bleeding very freely on the slightest touch, the secretory ability of its mucous crypts completely destroyed, the teeth loosened and undergoing destruction by the semi-sordes matter present about their necks. Caries, the result of this class of scurvy, is much more frequently met with by the country than the city practitioner. When practicing in New Jersey, some years since, I had an opportunity to gain much experience in it. I think its cause may be found in a too common use of salt-meat; at any rate, I have always found this the principal animal food used by persons afflicted with the disease, and have been enabled to arrest the caries by a complete change in the manner of living. The local treatment is the same as suggested as having been found so successful in mercurial sore-mouth: the free use of the lancet, the careful employment of iodine; and perhaps the potassæ chloras is not ill replaced with some of the dilute acid preparations. I say the careful use of iodine, for, applied in a too concentrated form, you may destroy the little remaining vitality of the part, giving yourself a trouble not anticipated. Diseases presenting such marked local characteristics as this last, convince the practitioner of the necessity of treatment apart from the local; indeed, he cannot operate upon the teeth until he has made an improvement on the subjacent parts; or, if he should attempt it, he would soon have the *cast-off* teeth for his pains.

The green discolorations found often about the necks of the teeth, observable particularly on the incisors, is another of the constitutional causes of caries. I believe it is universally acknowledged as being indicative of a general atonic irritability of the mucous membrane, and is very often attended with sour breath and eructations. We all know how impossible it is to keep this deposit removed through scaling. The best agent I have found is the internal exhibition of the mineral acids. Most of them will answer; but, in my experience, the speediest effect will be obtained with the nitromuriatic—say five drops administered in a little sweetened milk or water three times a day. The local ill effects of this powerful acid may be neutralized with a single drop of ammonia, diluted, or strong Labaraque's solution.

Salivary calculus of almost every class possesses a constitutional origin, that is, there is either an indolent condition of the glands, or some peculiar character of the blood, from which the material is eliminated. Dr. Harris gives us an instructive and interesting chapter on these deposits, but unfortunately fails to suggest anything as to the general medication required.

The pale, yellowish-brown tartar, mentioned in the work alluded to, is, I think, but a modification of the green, as the same general treatment will retard or entirely stop the deposit.

Salivary calculus, then, may be known to be a disease when there is no indolence on the part of the secretory organ, and a local origin may be taken into the diagnosis when the inference seems reasonable that the production is not eliminated with sufficient rapidity because of some adynamic condition of the gland or glands.

Temperaments.—I think, other things being equal, that a prognosis of dental conditions may be much assisted by taking into consideration the temperaments. A person in a state of equilibrium, so far as all his organs are concerned, may be pronounced temperamentless, and should be in the most perfect health. It follows, then, that the marked possession of temperament—by which we mean a predominance either of function or development in any structure, organ, or system of the body—is apt to lead to disease of that part, and, *per se*, of its relations. Thus, in the lymphatic, which is characterized by excess of colorless tissue and deficiency of red blood, we have the predisposition to scrofulous conditions. The nervous temperament afflicts our patients with neuralgia; the bilious gives us the dyspeptic conditions. Of course, I need not proceed to draw other inferences than those a few moments since alluded to. So far as the cure is concerned, it is to be found in any means that will tend to the restoration or production of the equilibrium. The lymphatic man should have bracing air and plenty of exercise, and such medication as would tend to put more iron and oxygen in his blood; the nervous man should quit his books and sedentary life; the bilious should leave his warm or malarious district, and seek health in careful diet and the bracing air of a colder atmosphere.

There is a constitutional condition of the breath that has great influence on the health of the teeth, that is, so far as the ability to make good operations are concerned—a condition to which I believe I was the first to call attention. It consists in its being laden with an excess of moisture so peculiar in character as to destroy all the cohesive qualities of our gold, and, however careful we may be in arranging our napkins, this ethereal vapor will insinuate itself and defeat our purpose. In the interesting paper on "Buccal Secretions," read at Washington, by Dr. Taft, occurs the following passage:—

> "There is another depraved condition of the saliva, not so marked in its character nor injurious in its effects as that just referred to. It is characterized by a semi-oily condition; it is free from that tenacity and stringiness exhibited by some other depraved conditions. It insinuates itself into every interstice where it can at all approach; it will moisten the surfaces of the teeth when the utmost care is taken to protect them: and the dentist will thus often find himself exceedingly annoyed by saliva of this character. Where it exists, it is almost impossible to keep an operation dry. The peculiarity is derived from the mucus which, in such instances, is elaborated very freely."

With all due regard to the views of Dr. Taft, I think he will find he has the wrong vehicle for this oily peculiarity. It cannot be the saliva, because, by the careful employment of napkins, we can protect our cavity, particularly simple upper ones, which give us the same trouble as any others. And as to its being a mucoid secretion, I am also disposed to here doubt his conclusion, because by the use of powerful astringents, such as a strong solution of iodine painted over the mucous membrane just before operating, we can equally protect ourselves against the secretion of mucus, and which, from oft-repeated experiments, I know to be useless. That it is in the breath, I infer from its ability to moisten quickly and thoroughly any substance held before the mouth, and because the best guard I have been able to find against it is to have my patient breathe through the nostrils during the time of the operation. As regards a treatment, I have not as yet had an experience which would make any suggestion of much value. I can only remind you that it is specially a condition of the lymphatic, strumous temperament, and any treatment must of course incline to that direction.

Before taking my seat, I desire to direct attention to a diathesis which a somewhat close observation has led me to infer has much ill effect on the teeth: I allude to the uric acid diathesis. In this diathesis the teeth will be found quite prone to decay, while uric acid is discoverable in the fluids of the mouth—I mean uric acid crystals. It is very true that these crystals are soluble in fluids found in the mouth coexistent with them; but the decay of the teeth must be in some way associated with the diathesis, for my investigations have led me to infer that the uric acid found in the mouth can have nothing to do with it. I merely throw out the suggestion, that others, better able than myself to pursue such chemical investigations, may examine the subject, if deemed of sufficient importance.

If I were asked to name a disease or condition which destroyed most teeth, I would answer, unhesitatingly, "anæmia." In the anæmic patient there is not a part of the body that would not succumb as readily as the teeth, all conditions being equal. Of the ill effects on the teeth of this morbid poverty of the blood we have the most marked evidence in the chlorosis of the young girl. Without a union of the general with the local dental treatment, operations do not seem of much effect. The teeth decay rapidly, and the best operations are made comparatively useless by the caries almost at once reappearing. Yet, important as is the influence of this condition on the general health, it is happily one of the best understood; and were it not for the complications which its continued existence begets, its treatment might be summed up in the directions: iron, good food, and exercise in the open air. And when in this uncomplicated condition, why should it not be the duty of the dentist to treat it? It costs him no trouble; and even if it did, such cases have sufficient interest to repay him. When, however, complications exist which involve important parts and functions, as, for instance, organic diseases of the heart, liver, stomach or intestines, it may perhaps become questionable as a matter of policy and convenience whether the physician should not share the case with us; but I opine it never can be a question whether or not the dentist should or should not be familiar with them.

Dr. McQuillen remarked that he had ever advocated the most extended curriculum of study on the part of dental practitioners and students; but had also been disposed at the same time to observe, so far as he was individually concerned, a line of demarkation between the practice of dentistry and medicine. In the observance of this, he had possibly been disposed to accord more to the practitioner of medicine than he would actually claim, or there was any occasion on the part of the dentist to yield.

With regard to the subject under consideration, it is a matter alike interesting and important, both to the medical and dental practitioner. The first may be compelled, in his efforts to arrest the progress of disease, to employ agents which exert a deleterious and destructive influence upon the teeth, while the latter is called upon not only to observe these effects, but in addition, if the teeth are not too radically affected, to exercise his handiwork in remedying the ravages attendant upon the use of such agents. He did not wish to be understood by these remarks as reflecting upon the medical practitioner for using such agents, as he fully recognized that where it is a matter of life or death, or where there is a choice between recovery and long continuance of some chronic affection, it is a matter of vital importance that the most potent and reliable agent should be administered, however destructive it may prove to the dental organs. But, when such agents are employed, it must be evident to all that every precaution should be exercised to prevent or neutralize their action upon the teeth. Thus it is an important and should be an ever-recognized indication, on the part of the medical practitioner when prescribing an acid remedy, to accompany it with a prescription for the alkali best calculated to neutralize the portion which remains in the mouth. It is to be supposed that such a course would naturally suggest itself to the mind of every physician, and yet he had been informed by an intelligent druggist that such a thing rarely if ever occurs. Advice may be given, but it is in that general manner which rarely if ever commands implicit obedience on the part of the patient.

Of the different remedies employed by medical practitioners, one of the most common is the tincture of the chloride of iron. Now, valuable as this agent is, when properly employed, the indiscriminate and careless manner in which it is used by some is highly censurable. He had been informed by the gentleman already referred to, that the wholesale order for this article from country practitioners far exceeds the average of the orders for other articles.

In illustration of the effects of this remedy upon the teeth, he exhibited three teeth which had been exposed to the action of the officinal preparation for twenty-four hours; on examination, the enamel of the teeth was found considerably softened.

Reference was then made to the indiscriminate manner in which the different mercurial preparations had been employed in former times, and the unfortunate sequences which followed their use, viz.: the loosening and falling out of teeth, accompanied, in many instances, by the extensive exfoliations of bone. Fortunately, such results are but rarely presented in our day. For instance, those horrible deformities of the face accompanying the syphilitic disease so common in other days, are rarely presented in ours; and this is no doubt due to the fact that mercury is not employed to the same extent or in the careless manner which formerly characterized its use. As had been truly said, "mercury is a two-edged sword, capable of doing a great deal of good or a great deal of harm according as it is properly or improperly employed."

Dr. Fitch thought the importance of this subject had not been fully appreciated by the dental practitioner. Medicinal agents must act upon the teeth, if at all, either constitutionally or chemically; and in our investigations we must necessarily trespass upon the hitherto acknowledged domain of the medical practitioner.

That important influences are exerted upon the teeth by the constant changes superinduced in the organism by the administration of different medicinal agents, cannot be a question of doubt; and although the teeth, of all the human organs, are the lowest in the scale of vitality, we must yet recognize the two forces of organic life, viz., vital and chemical, as presiding over them. If this be a true position, it follows naturally that these forces, in their harmonious or disturbed action, must be ever active as in other organs, yet in a degree corresponding to the grade of their vitality, to preserve the integrity of organic power in repelling and resisting disease, or to render their structure an easy prey to constitutional, chemical, or mechanical influences.

The two last-named conditions may be overcome to a certain extent by local treatment, but the former will require a restoration to harmony of the organic forces which control and direct nutrition, disintegration, etc., influences which properly constitute the tissue a living structure. To restore this harmony of the chemico-vital force, viewed either in a general or specific sense, requires general or constitutional treatment; but that there is great danger of producing this functional disturbance by an exhibition of medicinal agents, whenever given, either in doses too large or too long continued, is a position which cannot be successfully controverted.

If this may occur, and it no doubt often does, why should not the dentist, in diagnosing and treating diseases of the teeth, not only extend investigation in this direction, but meet the demands in the individual instances by a thorough and persevering constitutional treatment? Indeed, is it not his duty and special province? Neither ought this to be considered a trespass upon the domain of the general practitioner of medicine.

He thought the dentist should be so educated as to readily diagnose, from the temperament and constitutional conditions of his patient, the causes operating in the destruction of the teeth; hence the importance and necessity of a thorough knowledge of those subjects embraced in this view of the question. Could refer to an instance occurring in early practice: temperament, bilio-nervo-lymphatic, with a predisposition to strumous habit; teeth finely developed; organic substances in excess. He filled the superior incisor teeth, but they, unfortunately, dropped out in two years; refilled with great care, and with like success in about the same length of time; again operated, and at the third visit, which occurred within two years, found the teeth broken off near their alveolus; has since considered this a fit subject for constitutional treatment.

He thought physicians in some instances very careless, and frequently reprehensible, in the administration of remedies having a chemical affinity for the different constituents of the teeth, manifesting an utter disregard as to the importance and value of protecting these organs.

Had been much interested in the specimens of natural teeth presented that had been subjected to acid tests by Drs. Barker and McQuillen. Some years since had seen some marked instances of natural teeth subjected to chemical tests in a course of experiments conducted by Dr. Wescott, of Syracuse, and more recently by Dr. Allport, of Chicago. While the action of many of the remedial agents upon the teeth was rapid and marked, with others it was slow, and with a few, except in discoloration, was scarcely perceptible.

Dr. Barker remarked that while he would agree that in some sections of the country the use of calomel, or hydrargyri chloridum, was not used as indiscriminately as in former days, yet was induced to believe, from a knowledge of the general prescriptions of many medical practitioners in other parts, that it was still used in too large doses and with too little care. He could not believe that the injurious effects upon the teeth and alveolus, observable after prolonged ptyalism, were due to subsequent neglect; but considered the blackened appearance of such teeth and their early decay to proceed from a loss of circulation derived from the periosteum, which, if the ptyalism is prolonged, usually dies, and in many cases death of the dental pulp likewise occurs. He had at present under treatment the inferior incisor and canine teeth of a lady, who, a few years since, was profusely salivated. After her recovery, the teeth became firmly fixed in their alveoli; but absorption of the alveolar process, surrounding the teeth above mentioned, has proceeded for the last year to such an extent as almost to expose the extremities of their fangs. The pulps of each have died, and caries has attacked the labial surfaces. In a late conversation with a Russian, whose business was fire-gilding, in which the fumes of mercury are, to some extent, necessarily inhaled by the operatives, was assured that even when the effect upon the systems of the workmen had subsided and the teeth had become firmly fixed in their sockets, in a few years absorption of the alveolar process would commence and the teeth would gradually fall out of their sockets.

He would briefly refer to phosphoric necrosis, which is fortunately rare, and is usually met with in those persons employed in match factories, and has been by the best writers attributed to the result of uncleanness on the part of such operatives; it being considered that the poison, in the form of a volatile acid of phosphorus, such as the phosphoric acid, is taken into the mouth with the food, is absorbed by the saliva, for which it has a strong affinity, and that thus the bony structure is directly attacked. If any of the teeth are carious and the alveolus is exposed, the local malady commences and extends slowly and insidiously along the maxillary structure. The effect upon the bone is most probably chemical, phosphorus having an affinity for the earthy constituents. Richardson supposes that some new combination is set up between the phosphorus, to which the bone is unduly exposed, and the other chemical elements, and that upon this combination the disease is based. The disease, unfortunately, in almost all cases, terminates fatally, though some, I am told, have been successfully treated at the Pennsylvania Hospital.

He considered a most frequent cause of caries in this country was dyspepsia. In that disease we not only have a general derangement of the functions of digestion, but acid eructations from the stomach; and the salivary glands, instead of eliminating an alkaline fluid, throw out an acid one; the mucous secretions also present the same acidity. If, during such a condition of the system, acids are taken, either in food or as remedial agents, is it not just to conclude that chemical action and subsequent decay would be the result?

He remarked that a difference of sentiment existed with regard to the effect of sugar upon the teeth—many considering its influence under all circumstances as deleterious. He was, however, inclined to believe it was perfectly harmless, when the salivary secretions were in a normally alkaline condition. If, however, the saliva should be acid, and portions of sugar should be retained between the teeth, acetic acid would be formed, which would affect the teeth most injuriously, and would not, as in a healthy condition of the secretion, be neutralized by the presence of normal saliva. He considered that such quantities of sacchariueous articles of diet could be taken and retained in the mouth as to effect and change even healthy saliva, and in such cases act upon the teeth. He was instituting several experiments to determine the effect of certain kinds of food upon the teeth, but was not at present prepared to present them.

Dr. Garretson was inclined to think his friend wrong in his opinion as to the decreasing exhibition of mercury. In venereal disease, it is certainly not his experience. It is most true, that there is a great decrease in the number of cases of ptyalism, but this is owing to a judgment and caution in the administration of the medicine. The bichloride, which is the preparation now principally employed, may be given for a very long time without inducing any perceptible salivation. This preparation may be employed in minute doses, one-twelfth of a grain being the quantity mostly given. Dr. Gross is in the habit of prescribing it in syphilitic conditions, in the proportion of one-twentieth of a grain to ten grains of the iodide of potassium, three times a day. Mercury thus prescribed, if carefully watched, may be given almost continuously for weeks and months. Has known a man salivated with ten grains of the single chloride or calomel, so that the tongue could not be retained in the mouth, and this effect was produced in a single night. Ten grains of calomel is quite a common dose. Mercury is the sheet-anchor now, as ever, in syphilis; and there are few, if any surgeons, who would run the risk of taking charge of a case without its use. But mercury is not a cause of dental caries. It certainly does destroy the teeth; but its effects are produced by destroying the vitality through the periosteum. Mercury acts upon the gums; it affects the periosteum in proportion as it affects the gums. The teeth will drop out, if ptyalism is severe, completely denuded of their periosteum.

When the constitutional cause of caries is obscure, a diagnosis should be made, just as in that of any obscure medical disease. First, the general condition of the system might be considered. Is it sthenic or asthenic? Is it working above or below the proper level? Have we a pulse depressed or continuously exalted? Is it quick and strong, or quick and weak? Then have we acute or chronic anæmia? Have we scrofulous, scorbutic, or carcinomatous cachexia? Have we nervous, bilious, sanguine or lymphatic temperament? or have we combinations of these temperaments? Then what disease is common to such conditions? and is there any disease therewith connected by which we may discover a relation, direct or collateral, with the well-being of the teeth? And so on, until we get our diagnosis.

He considered at some length the subject of anæmia, showing the effect of such condition on the general health, and particularly on the health of the teeth; gave, in example, several cases where he had arrested the decay of the teeth, through such constitutional medication as seemed indicated, and where, before such treatment, operations on the teeth were of very little service.

He desired to be understood in his former remarks, and did not advocate the dentist turning doctor or surgeon, as he would not have the inclination nor the opportunity to gain the clinical experience, without which either of these pursuits could not be successfully practiced; but the dentist should be as well grounded in the principles of medicine as either of them. While inclining himself rather to a surgical than a dental practice, yet no man could have a higher regard for dentistry; and should ever advocate the same education for the dentist as for the physician. The dentist to commence the mechanism of his profession only after completing the curriculum of the physician. The object of the professional man should be the greatest good of him he serves; and nothing should be left undone which would assist him in rendering such service.

Dr. McQuillen said, the valuable specimens presented by Dr. Barker, illustrating the effects of citric acid upon the teeth, recalled to his mind the case of three sisters who had come under his notice, in which nearly all the teeth were lost prior to their twentieth year. That this result could not be attributed to defective formation, was proved by the fact that each of them had always enjoyed perfect health, and that their father, mother, and brothers possessed excellent teeth. In the course of his inquiries relative to the cause of this early loss, he had been informed by them that during their school-girl days they were very fond of, and expended a large part of their pocket-money in purchasing lemons, which they used to eat. This explanation was sufficient to account for the existing state of things, for such a practice could not be pursued for a considerable period without being followed by the most disastrous effects upon the teeth.

At a former meeting of the Association he had taken occasion to advance the view, that in certain conditions of the organism an excess of lactic acid is formed in the system, and that its elimination by the salivary glands was calculated to exert a deleterious effect upon the teeth. In support of this, the attention of the members was also directed to a tooth which had been lying in lactic acid for nearly a year. It was found reduced almost to a cartilaginous mass.

In response to a remark with regard to uric acid, he said that it appeared reasonable to infer that in the uric acid or gouty diathesis there is more than enough of the acid present to saturate the various salts found in the different fluids of the body, to form the urates of soda and lime, which constitute the chalk-stones found about the joints; and that the excess must be excreted by the different glands, the salivary no doubt coming in for their share. If, then, uric acid should be present in the saliva, it certainly could not be regarded as an altogether unwarrantable hypothesis to suppose that the same reaction would take place between it and the mineral constituents of the teeth, which is universally admitted to occur between uric acid and the phosphates and carbonates of lime and soda in the other fluids of the organism.

Dr. Fitch agreed with Dr. Garretson that mercury had little, if any, direct effect upon the teeth; its marked influence was upon the glands and the mucous surfaces. In cases of ptyalism, fearful results upon the dental structures were in a great measure attributable to subsequent carelessness or injudicious treatment. Some twelve years since, saw a case of mercurial sore-mouth, where it was followed by the loss of the bicuspids and molars of the inferior jaw, together with a considerable portion of the contiguous maxilla. Was called to the case in its advanced stages. Thought at the time, and still thinks, that these sad results were due to the causes just mentioned, rather than to any direct effects of mercury.

It was possible for many depraved conditions of body, or cachexia, to show themselves remotely upon the teeth; but in case of diabetes, instanced by Dr. Garretson, he doubted the position assumed. Had seen several such cases where death ensued, but the teeth remained unaffected. Thought that protracted organic or functional disease might affect the teeth, so far as nutrition and the vital forces were concerned, but no further.

Dr. Garretson said, no more marked or interesting example of a constitutional deterioration in the saliva can be given than that induced by the hydrophobic condition—a vitiation induced in this secretion alone. In *rabies canina* this is the only poisoned principle, at least so far as the ability to inoculate is concerned. A post-mortem examination of the human species, and also, inferior animals, after death from this disease, exhibits no pathological condition outside of the vitiation alluded to, if we may except the occasional inflamed condition of the mucous membrane, particularly those portions associated with the larynx, pharynx, and the orifices of the stomach.

The milk of a cow bitten by a rabid dog has been used during the whole period of incubation of the disease, even to the very day at which rabies exhibited itself; yet such milk had no influence in propagating the affection. There are on record many cases in which infants have been fed on the milk of goats during the incubative period, while no bad results have occurred.

That the poisonous principle is eliminated alone in the salivary secretion is proven by our every day observation of cases. Thus, a bitten dog seldom escapes; while in man the proportion escaping is as fifteen to one attacked. (*Colles.*) The explanation seems plain; in biting a man, the saliva is wiped from the teeth of the rabid animal as they pass through the clothing. When a man is bitten directly on the unprotected flesh, his chance of escape becomes very much lessened. Thus, the Duke of Richmond lost his life while in Canada by being bitten on the thumb by a tame fox. Taylor mentions the case of a Mrs. Duff, who died from hydrophobia through inoculation from a poodle dog which she was in the habit of allowing to lick her face, the poisoned saliva being absorbed through an abraded surface. He remarked that the example was interesting to the dentist, inasmuch as it seemed to prove that from other causes certain pathological conditions might exist, a peculiarity of which should be the influence on the teeth while outside of the secretion itself.

Dr. Van Osten spoke upon this subject and referred to several interesting cases.

The subject of

"The Treatment of Palatine Fissures"

was chosen for next discussion.

EDITORIAL.

ARTIFICIAL BONE.

A substance under this name, and many others quite as absurd, has been freely offered to the profession of late, and by some operators quite as freely used, for plugging teeth. We have received private communications from those who manufactured it for sale, bearing every evidence that they were sincere in their endeavors to produce something useful to the profession; but others have urged it upon the profession hastily, claiming more for it than was warranted by their experience, as if they desired to make it merely a commercial article; large sales without caring for results. Others in practice profess to have abandoned gold entirely to the use of this highly-extolled article. True, some have written against it, but more from theory than practice; nevertheless, time has convinced us that many doubts about its merits have been correct. We do not wish to be understood as condemning any man who manufactures it for sale or uses it in practice. We are aware that many things which have failed on first trial have been improved and rendered valuable by further experiment. But we do condemn *in toto* the present article and the indiscriminate manner in which it is used for plugging teeth. If it had been confined to the filling of teeth which were of no very great value, little could be said against it; but it has been used in all sorts of cavities, back and front teeth, over nerves and over sensitive dentine and decay, over caps for exposed pulps and cotton in pulp cavities, and even mixed with gold to make it stick. The introduction of a new article for filling or setting teeth is marked by, for a time at least, a large amount of careless, injudicious, and bad work, partly because so much is claimed by inventors that is not true, and the mass of the profession, old and young, are seeking for something new to simplify or shorten the road to success in the various operations in our art. We do not mean that experiment shall stop, or that new things and practices may not come into our profession to surpass many old or present ways and means of doing operations; but we object to the mass of the profession setting in to the use of an article by seeing a single experiment in the mouth of the vender, whose reputation is not affected by the failure of the substance in the hands of the purchaser. Our experience is, that the whole community pay dear for the "whistle" when a new thing is introduced to their notice. There is a vast amount of bad work done at such times by men who did good operations before and by well-established methods. It may be said, how are we to make improvement unless it be by well-directed experiment? We would answer, is it right to plug a useful and valuable tooth with a new substance, until it is well tested on teeth which are not of so much value? Why plug small cavities in front teeth four or five times in one year with the same article, until the repeated failures cause the nerves to become exposed? There can be no reason in such practice. Again, why should every dentist become an experimenter, and thereby produce a vast amount of mischief, when a few properly-selected persons could conduct the same experiments by inflicting only a limited proportion of evil, and by those who had no commercial interest in the success or failure of a new method of operating or material? Our profession is not sufficiently well organized to protect itself against imposition by itinerant venders of materials for the profession's use, and very few in it seem to have the courage to resist adopting or using new things so strongly urged upon them, as they generally are, especially if they are backed by a dozen or more certificates by respectable but interested parties. A society ought to be formed, whose duty it should be to appoint a standing committee of practicing dentists to take up every new invention or material and thoroughly test it before it could be sold to any member of the profession for practical use. A dentist who finds an article useless which has been urged upon him, not only loses his money, but his reputation, consequent upon his failure with his patient. No one seems disposed to express an opinion against an article until a large amount of damage has been done by it, because one opinion is no better than another until experiment verifies it. We have refrained, though frequently solicited, to express our views on the artificial bone, because we did not use much of it ourselves; but as others in the profession have used it, and their work has come under our hands, we are safe and right in saying that, as it is used at present, it is not reliable as a permanent filling, and for temporary filling it is not as good as the old-fashioned "Hill's stopping." J. D. W.

WE regret to state that in our published list of the officers elected by the American Dental Association, the name of the Treasurer, Dr. S. Dillingham, of Philadelphia, was unintentionally omitted. G. T. B.

REVIEW OF DENTAL LITERATURE AND ART.

BY J. H. M'QUILLEN, D.D.S.

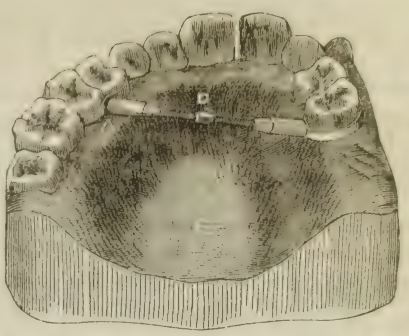
Separation of the Superior Maxilla in the Correction of Irregularity of the Teeth.—A writer in the *San Francisco Medical Press* favored us a few months back with the proof-sheets of an article upon the "Permanent or Adult Teeth," accompanied by a letter stating that, if desired, he would furnish advanced sheets of the continuation of the article.

Passing over the first part of the communication, which did not contain anything particularly novel, the remainder was republished in the June and July numbers of the Dental Cosmos, with illustrations which were engraved at the expense of the publishers of this magazine, who, with ourselves, desired to do *justice* to the part presented.

Finding, in the course of the communication, that the writer claimed to have separated the superior maxilla by means of the apparatus employed, we felt called upon, in the discharge of our duty in connection with the magazine, to remark that "with no disposition to assert that such a thing is *utterly* impossible, yet when taking into consideration the anatomical relations existing between the right and left superior maxilla and the other bones of the face with which they articulate, such a result appears *exceedingly doubtful.* Even admitting the writer to be correct, it would be a strong argument against the use of such an apparatus; for surely the irregularity of the teeth is a trifling affair compared with the separation of the maxillæ, which could not take place without inducing serious disturbance in the surrounding hard and soft parts."

This short comment, we find, has not only been taken unkindly, but the writer, in addition, deliberately charges us with altering an engraving to answer our purposes. He says, "in order to maintain the consistency of his own views, he has reproduced the second diagram illustrating the treatment of the case, in a manner differing so essentially from the original copy as to cause incongruity in the description, if not an entire misunderstanding in the premises."

On reading this, we compared the original illustration with the copy, and regretted to find that in the latter the central incisors are represented as being close together, when they should have been considerably separated. This, however, was no fault of ours, but a mistake of the engraver, and due to the fact that the impression from which he obtained his copy was not a very perfect one, being taken from the proof-sheets already referred to. Those who are at all acquainted with such matters are well aware that proof-sheets are not generally printed with a great deal of care.



The charge that the engraving was altered intentionally, we deem unworthy of any other notice than to say that it is difficult to understand what advantage it could be to us, for not the slightest allusion was made to it in our comments.

Desiring to be fair and impartial at all times and under all circumstances, notwithstanding the unjust imputations of the writer, the accompanying engraving has been prepared for the purpose of representing exactly the separation between the central incisors described by him.

In the course of his response he remarks:—

"The rotating shaft, as employed in the case under immediate consideration, rested on the right side against the lingual surfaces of the first and second bicuspids, and on the left against the same surface of the second bicuspid, in which position we will endeavor to more fully explain its action. Each revolution of the shaft, after its adjustment, elevated the teeth to which it was attached upon their cusps, and gradually separated the superior central incisors, which for a considerable period were more than a line asunder.

"My attention was directed to the incisors when they were only slightly separated, by the remark of the patient, that they had become quite loose. It is my impression that there was no complaint of pain in or about the teeth; the mucous membrane, however, from the incisors for a considerable distance along the line of the suture that separated the palatine arch, which separation may be termed the palatine suture, discovered a heightened color. The incisors when considerably separated could be easily pressed together, and would at once spring back when the pressure was removed. They were separated for so long a period that we had no expectation of reuniting them, yet when the apparatus was applied for moving the bicuspids posteriorly, resting upon the latter, and extending to the lateral incisor, the space was speedily closed; yet with no diminution of the general width which had been secured.

"The distance between the lingual surfaces of the first bicuspids across the palatine arch, as shown by the plaster model obtained before treatment, is ten and a half lines. The model obtained after treatment from the same surfaces of the same teeth across the arch is thirteen and a half lines, showing a gain of three lines in width. It must be borne in mind that there was no direct pressure exerted upon the first bicuspid of the left side to move it in an outward direction. Pressure applied for this purpose would have augmented the difficulty we were preparing to correct, as it would have carried the cuspidatus farther from its fellows. The gain in width between the second bicuspids, to which the application was direct, was scarcely larger than between the first.

"These are the facts upon which we claim to have separated the superior maxillary bones of the patient under consideration. We do not claim, however, or suppose that the whole gain was secured in this manner. It is well known that the superior maxilla is composed of two distinct bones, and it is equally true that they have their peculiar and distinctive periods of development, as marked and significant to the anatomist as 'the handwriting upon the wall.' We are fully cognizant of these facts, and as fully satisfied that the separation can be as easily effected in other patients of the same age who are in possession of a reasonable amount of constitutional vigor, particularly if contraction of the arch may have been induced in a similar manner." * * *

"For our mode of treating irregularities, we not only claim the separation of the maxillary bones, but we also assert, without fear of contradiction, that this fact is of the highest importance in this branch of dental surgery. More particularly that it renders the treatment of a large majority of cases hitherto complex comparatively simple, while it saves an immense amount of time to the operator, and an immense amount of suffering to the patient.

"If the editor of the Dental Cosmos has occasion to employ the shaft which has been the subject of this article, and selects his patient in accordance with the foregoing suggestions, sees the case every day and watches it attentively, he will find that it is not so hard a matter to separate the maxillary bones as he now seems to believe, nor will he find the 'serious disturbance in the surrounding hard and soft parts' he seems to apprehend.

"We have thus far said nothing of the production of new bone, which we have no doubt was rapidly effected as we increased the width of the palatine suture. This was not referred to, from the fact that reproduction of bone, in the treatment of surgical cases, is here a matter of such common occurrence as to excite no surprise. We did not, therefore, reflect that it might be different in Philadelphia. We will further remark, that the models of the case under consideration have been repeatedly seen by dental as well as general surgeons of no inconsiderable eminence, and yet the learned editor of the Dental Cosmos has been the first to doubt the premises we have assumed."

With due respect to the opinions of the dental as well as general surgeons of no "inconsiderable eminence," who appear to have been perfectly satisfied, by merely examining "the models of the case," that the maxilla had been separated, and with no disposition to question the veracity, much as we may differ in opinion with the writer, we would take the liberty of stating that such evidence, however satisfactory it might be to others, would be insufficient for us. We should desire to examine the mouth and pass a finger along the roof, and expect to find, if an actual separation had taken place, the palate not merely reddened, but quite soft along the raphé. In addition to this, on grasping the right and left superior maxilla between the thumb and forefinger of each hand, we should expect to find them quite loose; and, according to the direction in which the force might be applied, whether inward or outward, that they could be brought together or separated.

Although the writer regards the separation of the maxillary bones as a matter of the highest moment in this branch of dental surgery, and predicates his opinion, that he succeeded in accomplishing it, upon the fact that the central incisors were separated when the force was only applied to the bicuspids; it is not difficult, when taking into consideration that the alveolar process contained by far the largest proportion of organic matter of any other part of the osseous system, to account for the space obtained—three lines, or one-fourth of an inch between the bicuspids, and one line or one-twelfth of an inch between the central incisors—by attributing it to the yielding character of the process. If a separation of the bones had taken place, it is reasonable to infer that the space gained between the incisors should have been equal to that of the bicuspids.

As already remarked, we do not wish to be understood as asserting that such a thing is *utterly impossible*, for we are fully aware that occasionally, during parturition, separation of the os innominata even takes place at the symphysis pubis. Although this is calculated to increase the diameters of the superior and inferior straits of the pelvis, and thus facilitate the passage of the head of the fœtus, we have yet to hear of an accoucheur who desires or regards the existence of such a state of things with complacency.

AMERICAN JOURNAL OF DENTAL SCIENCE—JULY.

The following description of an apparatus constructed for the purpose of remedying the horrible deformity of the face, resulting from the ravages of syphilis, is worthy of attentive perusal. The apparatus constructed is remarkable alike for the originality of the conception and its successful adaptation.

"REPARATION OF THE FACE AND PALATE BY MECHANICAL MEANS. By WM. H. HOOPES, D.D.S.—Every operation, whether surgical or mechanical, which aims at a restoration of the natural appearance of the human face when a part of it has been destroyed, is attended with peculiar interest. This arises from two causes. First, deformities of the face are especially disgusting to the patient and to the beholder. Secondly, surgical appliances have to be skillfully managed, or they merely call attention to the fact that such an effort has been made without success.

"The case herewith reported offered but little hope of any relief on account of the extent of the deformity; but it was undertaken, and with what success may be inferred from the sketches of the face copied from photographs taken before and after the apparatus was made and adapted.

"The history of the case and the present state of the affected parts are as follows:—

"H. R., aged thirty years, has enjoyed good health until fifteen years ago, when he contracted primary syphilis. About four years afterwards, the disease in a tertiary form attacked the internal surface of the nasal bone, and continued to spread for some five years, when fortunately its progress was arrested, though not until it had committed the most terrible destruction of the bones and soft parts of the face.

"The appearance of the face presented gives but an inadequate idea of it. It may be better understood by a description. The lower margins of the nasal bones are destroyed, with the entire vomer, the nasal cartilage, and a portion of the septum. The left inferior turbinated bone is gone, and a portion of that of the right side. The anterior portions of the malar bone are destroyed on the left side nearly reaching the antrum. Nearly all of the superior alveolar process is gone, leaving a mere rim, with three molar teeth on one side and two on the other; the central portion of the palate bones is also gone, leaving an open space about the size of a half-dollar piece. Of the soft parts the destruction has not been less extensive. The upper lip is destroyed, except at the angles of the mouth; ulceration had taken away much of the soft tissues of the posterior nares. The muscles of the upper lip and face that are partly destroyed are the orbicularis oris, levator labii, superioris alæque nasi, and on the left side a part of the zygomatic and levator anguli oris. It should be remembered that the sketch given reverses the side of the face.

"On looking inward and downward, the parts presented a deep, large cavity; the motions of the uvula could be seen by looking into the nose, and the tongue closed the opening through the palate bones. Of course, speech and deglutition would have been impossible had not the patient continually kept a large piece of raw cotton in this opening. The lower lip had also begun to suffer the ravages of the fearful disease, but it was arrested at this period, and this lip presented an enlarged appearance, from the healing of a large granulated surface.

"The first step in the process of making a mechanical contrivance to hide this hideous deformity, was to make a cast in plaster of the anterior portion of the face, and another cast of the mouth. A gold plate was then made, fitting the roof of the mouth; upon this were inserted all the teeth that were deficient, and this plate was clasped to the remaining molar teeth. A model of an artificial nose and upper lip was then made as near the natural form as possible. A cast of this model was filled with hard rubber, which was then vulcanized. A gold bar was attached to the inside of the artificial nose, which was made more firm by a cross-bar. The opening through the palate bones gave an opportunity to secure the nose to the plate; this was done by attaching a short tube to the plate and passing the bar through it. The plate was then placed in the mouth, the nose was attached to the face, and the bar was passed through the tube, which held it firmly in position. The stiff unnatural appearance of the upper lip was hidden by a heavy artificial mustache. The connection between the artificial and natural noses was concealed by the bow of a pair of spectacles. The artificial nose was then given a life-like color, and the illusion was complete."

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American Dental Review—August.

The following extract is taken from the report of the proceedings of the annual meeting of the Western Dental Society, held at Springfield, Ill., July 5, 1860. The meeting appears to have been a very interesting one, and the subjects selected were treated in a very proper manner. We would direct attention particularly to the extract, which is an abstract of the address of Dr. C. W. Spaulding, on retiring from the Chair, not merely on account of the sentiments advanced, but for the clear, comprehensive, and terse manner in which his views are presented.

"There are periods in the history of all pursuits, when, by the introduction of new principles and ideas, or the exciting to activity of those that are lying dormant, changes are effected which mark such periods in so strong a manner, that they may be said to constitute eras in the history of that particular calling.

"I look upon the present as one of these times in the history of dentistry. For the past few years the profession has been feeling its way in its attempts at organization, and has been experimenting on the best plan of association. Among the experiments that have been tried has been that of a popular convention. In making this experiment the broadest basis of membership was taken, and the largest liberty extended to every man who chose to call himself a dentist. None could be excluded, however deficient he might be in all that goes to make up the qualifications of a dentist. Good, bad, and indifferent, all stood upon a common level, and the voice of the merest tyro was as potent as that of him who had had years of experience, and who had spent the best of his life in patient study and unremitting toil.

"This popular movement, however, has not been as successful as its advocates had hoped and supposed that it would be. While it has failed to accomplish the purpose for which it was set on foot, it has still performed its use, and has helped to open the way to something better, and, I trust, more permanent. It has exhibited the tendencies of the professional mind, and has served to bring together distant members of the profession, and showed them not only the practicability and utility, but also the necessity of organized associations. Like the first beginnings of government, where the people assemble together on a common basis, and take the first actual steps toward that more perfect organization which is to follow, so this gathering in of the masses of the profession served to initiate a better feeling among them, and to beget a desire for a general and thorough organization of the whole profession.

"In the performance of this great work, certain principles should be set up as land-marks to guide our actions and prevent our going astray.

"On the one hand it is proper to avoid that exclusiveness which tends to lodge the interests of the profession in the hands of a few, and, on the other hand, certain guards should be thrown around, which would protect it from the designs of ambitious but unworthy men. It is within these limits that we are to look for success; and while it is proper that we should profit by the experience of others, it can hardly be expected that we should copy even after 'the brightest intellects of the age.' The members of the dental profession have never been prone to walk in a beaten track, or to follow the lead of any particular class of men; individuality has always been one of their leading characteristics, and I regard it as one of the glories of the profession that it has ever been marked by a spirit of independence which has led its members to throw aside old forms and usages, and to strike out in new channels. This spirit is necessary for the development of a young profession, and leads men to try new things, throwing aside what is not good, and adopting all that experience shows to be useful.

"I have been led into making these remarks in view of the approaching meeting of the delegate convention in Washington. I look upon this movement as the most promising of any that has yet taken place, and desire to improve this opportunity of recording my sentiments in favor of the representative system."

DENTAL REGISTER OF THE WEST—SEPTEMBER.

The accompanying remarks embody, in a few words, excellent advice with regard to the propriety of inserting preparatory dentures immediately after the extraction of the natural teeth. In the early part of our practice we were disposed to look upon such a course with decided aversion, believing that the pressure of the plates in a mouth, when the gums were in a lacerated condition, must act like a foreign substance in contact with a wound in any other part of the body, and thus be a constant source of annoyance to the patient, and materially retard the healing process. Within the last eight years, however, we have had many opportunities of observing the advantages attendant upon the adoption of the plan advocated by Dr. Allen.

"HOW LONG, AFTER THE EXTRACTION OF NATURAL TEETH, BEFORE AN ARTIFICIAL DENTURE SHOULD BE INSERTED? By DR. JOHN ALLEN.—From one to two weeks the writer deems sufficient time, under ordinary circumstances, for the patient to go without teeth; and in many instances even a shorter period would suffice.

"But as there is a difference of opinion upon this point, we will present the different theories, and submit to the reader their claims to supremacy. The objections urged to an immediate insertion of a denture are: that the gums will not become smooth and symmetrical if a plate be fitted to them before the alveolar processes have fully absorbed, but will conform in a greater or less degree to the irregularities of the temporary plate, and prevent a good practical result; consequently they advise their patrons to go without teeth at least one year.

"This theory we think erroneous, because the slight undulating surface of the gums which the plate may have occasioned presents no valid objections; for a permanent plate can be fitted to them just as perfectly at the expiration of one year, as if a temporary plate had not been worn, and the wearer will have become so well accustomed to artificial teeth, that the second set can be worn and used at once without difficulty, if properly constructed.

"Again, the longer the natural teeth have been out, the harder it is for a person to acquire the use of artificial substitutes, for the lower jaw is thrown forward of its natural position, the lips become compressed, the muscles of the mouth and face contracted, and the tongue habituated to certain movements in munching food, which tend to dislodge the dentures when attempting to use them, and the original expression in many instances is lost.

"The advantages of an immediate insertion of artificial teeth, after the removal of the old ones, are:—

"1st. The patient will acquire the faculty of using them satisfactorily in much less time than if required to go without any teeth until the healing of the gums and absorption of the alveolar processes have taken place.

"2d. The original expression can be much better preserved, as the denture prevents that compression of the lips and contraction of the muscles about the mouth and face which the absence of the teeth will cause.

"Temporary sets should be as skillfully made as permanent sets. There are many operators, however, who insert cheap and rude temporary sets of teeth, who seem to attach but very little importance as to how they are constructed; for they are only intended to be worn a year or two, which is deemed a sufficient apology for poor work. The price usually paid for temporary teeth will not justify the use of the best materials, nor the highest degree of skill and taste in their construction. This is another reason for cheap work."

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEO. J. ZIEGLER, M.D.

"*On the Contents of Three Square Yards of Triassic Drift.* By C. MOORE."—THE London *Athenæum* gives the following abstract of a paper upon this subject, read before the British Ass. for the Advancement of Science, at its recent meeting, June, 1860:—" From the extraordinary series of organic remains exhibited to the section by the author, and from the importance attaching to some of them, the reading of this paper excited considerable interest. The author stated that several years ago he suspected the presence of triassic rocks in the neighborhood of Frome, from accidentally finding a single block of stone on a roadside heap of carboniferous limestone, containing fish remains of the former age, but that for a long time he was unable to discover it *in situ*. More recently, when examining some carboniferous limestone quarries near the above town, he observed certain fissures which had subsequently been filled up by a drift of a later age. One of these was about a foot in breadth at the top, but increased to fifteen feet in breadth at the base of the quarry, thirty feet below, at which point teeth and bones of triassic reptiles and fishes were found. Usually these infillings consisted of a material as dense as the limestone itself, and from which any organic remains could only be extracted with difficulty. In another part of the section he was fortunate enough to find a deposit consisting of a coarse friable sand, containing similar remains. In order that this might receive a more careful examination than could be given to it on the spot, the whole of it, consisting of about three tons weight, was carted away to the residence of the author, at Bath, a distance of twenty miles; all of which had passed under his observation, with the following results:—The fish remains, which were the most abundant, were first noticed. Some idea might be formed of their numbers when he stated that of the genus Acrodus alone, including two species, he had extracted 45,000 teeth from the three square yards of earth under notice, and that they were even more numerous than these numbers indicated, since he rejected all but the most perfect examples. Teeth of the Saurichthys of several species, were also abundant; and, next to them, teeth of the Hybodus, with occasional spines of the latter genus. Scales of Gyrolepis and Lepidotus were also numerous, and teeth showing the presence of several other genera of fishes. With the above were found a number of curious bodies, each of which was surmounted by a depressed enameled, thorn-like spine or tooth, in some cases with points as sharp as that of a coarse needle; these the author supposed to be spinous scales, belonging to several new species of fish, allied to the Squaloraia, and that to the same genus were to be referred a number of hair-like spines, with flattened fluted sides, found in the same deposit. There were also present specimens, hitherto supposed to be teeth, and for which Agassiz had created the genus Ctenoptychius, but which he was rather disposed to consider, like those previously referred to, to be the outer scales of a fish allied to the Squaloraia. It was remarked that, as the drift must have been transported from some distance, delicate organisms could scarcely have been expected; but, notwithstanding, it contained some most minute fish-jaws and palates, of which the author had, either perfect or otherwise, 130 examples. These were from a quarter to the eighth of an inch in length, and within this small compass he possessed specimens with from thirty to forty teeth; and in one palate he had succeeded in reckoning as many as seventy-four teeth in position, and there were spaces where sixteen more had disappeared, so that in this tiny specimen there were ninety teeth! Of the order of Reptilia there were probably eight or nine genera, consisting of detached teeth, scutes, vertebræ and ribs, and articulated bones. Among these he had found the flat crushing teeth of the Placodus; a discovery of interest, for hitherto this reptile had only been found in the muschelkalk of Germany,—a zone of rocks hitherto wanting in this country, but which, in its Fauna, was represented by the above reptile. But by far the most important remains in the deposit were indications of the existence of triassic mammalia. Two little teeth of the Microlestes had, some years before, been found in Germany, and were the only traces of this high order in beds older than the Stonesfield slate. The author's minute researches had brought to light fifteen molar teeth, either identical with or allied to the Microlestes, and also five incisor teeth, evidently belonging to more than one species. A very small double-fanged tooth, not unlike the oolitic Spalacotherium, proved the presence of another genus, and a fragment of a tooth, consisting of a single fang, with a small portion of the crown attached, a third genus, larger in size than the Microlestes. Three vertebræ, belonging to an animal smaller than any existing mammal, had also been found. The author inferred that, if twenty-five teeth and vertebræ, belonging to three or four genera of mammalia, were to be found within the space occupied by three square yards of earth, that portion of the globe which was then dry land, and from whence the material was in part derived, was probably inhabited at this early period of its history by many genera of mammalia, and would serve to encourage a hope that this family might yet be found in beds of even a more remote age."

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Teeth of Rodentia.—"The Rodents, as the name implies, have the teeth constructed for gnawing, paring, or scraping down the substances on which they feed. The teeth are only of two kinds, incisors and molars. There are no canines, and between the incisors, which project from the very apex of the jaws, and the molars, which are situated far back, there intervenes an unfilled space of considerable extent.

"The incisors are universally two in number in each jaw, if we except the hares and rabbits, in which two minute incisors rise at the back of the large permanent ones; these are strong, compressed, and somewhat curved, with sharp, chisel-shaped edges. It is only their anterior surface that is covered with a thick layer of enamel, and this layer forms the cutting edge, as does the layer of steel on softer metal composing a common chisel. Their insertion into their sockets is very deep, but the inserted part is not a true root. These incisors spring from a pulpy germ at their base, from which they are perpetually growing, and this growth bears a due proportion to the rapidity with which their cutting edges wear away by use. So imperative is this law, that, where an incisor is lost by accident, its opposite, having no counter-check, keeps increasing, till it acquires an enormous development, to the annoyance, and often the death of the animal.

"The molars differ in number in different species, but they have generally a flat surface; traversed transversely by ridges of enamel, their structure being composed of perpendicular folds of this substance, united by intervening osseous matter. Further than this, we find in different species an important structural distinction. In some, these parts resemble the incisors, having no true solid roots, but perpetually growing as their surface wears away; in others, on the contrary, as the squirrels at a certain period, they gain truly formed roots, when all further growth ceases.

"Cuvier remarks that two great incisor teeth in each jaw, separated from the molars by a wide space, could hardly seize a living prey or rend its flesh; they could not even cut aliments, but they might serve, by continued labor, for reducing them into fine molecules; in a word, for gnawing them. This, then, is their precise purpose in animals of the order we are now considering, and hence their name, to which we have already referred.

"The lower jaw, moreover, is so articulated as to have no horizontal movement, except forward from behind, and *vice versa*, a special convenience for the action of gnawing. The molars, consequently, have flat crowns, the enamel eminences of which are always transversal, so as to be in opposition to the horizontal movements of the jaw, and to be better adapted for trituration.

"The genera in which these eminences are simple lines, and which have the crown of the tooth very flat, are more exclusively frugivorous; those which have the eminences divided into blunt tubercles, are omnivorous; and finally, the small number of those which have points, more willingly attack other animals, and approximate a little to the *carnivora*.

"In the Rodents, the upper lip, which is cleft longitudinally, is, in many species, an organ of prehension; or, at least, is of great importance in gradually transmitting the food into the mouth, as may be seen whenever a rabbit is offered a leaf or a stalk of clover or dandelion. The pharynx, or back of the mouth, is contracted, and, in some species, funnel-shaped, and capable of being closed by a circular muscle, in order that the food may pass gradually, as it becomes duly ground to pulp between the molars,"—(*Ext. from Cassell's Popular Nat. History.*)

"*Extreme Congenital Deformity; Separation of the Superior Maxillary Bones; Want of Proper Development of the Palatine Processes of the same Bone, and also of the Palate Bones, connected with Hare-Lip.* Removed by C. C. Field, M.D., of Easton, Pa.—About a year since, the wife of R. B., Esq., of * * * * Pa., gave birth to a child so hideously deformed as to cause great grief to the parents, and to excite the horror and surprise of all who witnessed it. The deformity consisted of an entire separation, at the suture, of the superior maxillary bones. A wide gap also existed in the roof of the mouth, in consequence of a deficient development of the palatine process of the superior maxillary bones, and also a like deficiency in the palate bones, producing a large opening, extending into the nasal cavities, every part of which could be distinctly seen, as well as the anterior part of the fauces. The separated portion of the right superior maxillary bone extended outward, and, turning to the right, drew down the nose to such an extent that the nostrils were scarcely perceptible, the nose being almost even with the face, and particularly the left side of it. Connected with this was a hare-lip, or what may perhaps be more fully expressed as an entire separation of the upper lip, being continuous with the opening in the maxilla into the nasal cavities. The wide anterior gap, the flattened nose, and the separated and contracted upper lip, presented a spectacle of the most hideous character, and spread terror among the neighbors, especially the females. The child, from its condition, was of course prevented from nursing. It was, therefore, fed on milk, introduced through a tube, until it was four and a half months old. I was called upon by Dr. A. C. Smith, under whose care the child was, to suggest something for its relief.

"After examining the child, which was healthy but not robust, with the greatest care, it was determined in consultation to attempt to remove the deformity, and place the parts in such a position that it would be able, as it increased in age, to masticate, swallow, and have all the advantages of speech, all of which, at least to a very great degree, it would never have been capable of without an operation. All things being considered, it was determined to operate upon the child without delay. Dr. Smith had charge of the case, on whose attention, subsequent to the operation, much of its success depended. Dr. Bowlsby, of Finesville, and Dr. Bergin, of Easton, were present to assist. The child, being properly secured, was held by an assistant. The two halves of the upper lip and the base of the nose were carefully dissected upward, on a line with the molar processes, and so held, when, with strong cutting forceps, the deformed portion of the superior maxilla was removed, also the margins of the palatine processes of the two maxillas and of the two palate bones. For the purpose of approximating as much as possible the two maxillas, they were partially separated from their connections with the malar bones with the forceps. The bleeding from the ends of the divided bones was most profuse, and could not be stopped by the most powerful astringents, when the actual cautery was resorted to, by which it was at once arrested. The bones were then brought as closely as possible in contact, the edges of the separated lip were removed, the parts united with needles and ligatures, and the whole supported by adhesive strips and bandages. Although at its close the child lay prostrate for several hours, the operation proved entirely successful.

"The child is, at present writing, perfectly healthy, and entirely free from all deformity; its appearance being so changed, that no evidence of the former irregularity can be seen. At the time of the operation, in December last, it was four and a half months old; it is now nearly a year, and all that was hoped to result from the operation has been realized. It can masticate, swallow without any artificial aid, and is as forward in speech and correct enunciation as children of its age.

"We send you an account of this case not merely in consequence of the great deformity that existed, but for the purpose of communicating at how early a period so fearful an operation may be performed and the benefits which have resulted from the operation, already enumerated."—(*Med. and Surg. Reporter.*)

Idiopathic Glossitis, with Observations on its Diagnosis and Treatment. By T. G. Geoghegan, M.D., F.R.C.S.I.—The following remarks on inflammation of the tongue connected with dental irritation, occur in a paper on the above subject in the *Dublin Med. Press* of July 25:—

"The affections with which acute idiopathic inflammation of the tongue is most liable to be confounded by an incautious observer are: acute cynanche tonsillaris, the severer forms of mercurial ptyalism, and a peculiar form of alveolar abscess, or aggravated gum-boil, which appears to me not to have been noticed by surgical authorities. The dysphagia, salivation, and fever of the first are common to it and to glossitis; the swelling, however, of the body and edges of the tongue in the latter, the infiltrated condition of the mucous crest beneath, and the altogether negative evidence afforded by the fauces, when visible, are sufficiently distinctive. If the surgeon cannot see the interior of the throat, he will be assisted by the prominence under the finger, and tenderness at the back of the dorsal aspect of the tongue, and sometimes beneath it, and by the swelling below the chin. As regards ptyalism, the condition of the gums and the evidence that mercury has not been administered, (when forthcoming,) and the local tenderness on pressure, are the most decisive. Abscess also, according to my experience, does not result from mercurial action, while ulceration is common. The distinction between mercurial and other affections of the mouth, based on an intrinsic character of the saliva, as proposed by Dr. Davidson, may possibly hereafter prove to be available in inflammation of the tongue. I have more than once verified the absence of indications of sulpho-cynanogen in the saliva in mercurial ptyalism. It remains, however, to be shown, that certain diseases do not also cause suppression of that constituent. I regret that the matter escaped my recollection at the time the above cases were observed. It is a subject worthy of the notice of future inquirers.

"The alveolar abscess above noticed, to some extent simulates glossitis. This affection I have found to depend usually on a carious condition of the lower dens sapientiæ, with acute periostitis of its root, more rarely on inflammation of the gum still covering this tooth at the time when its evolution has made some progress. The first-named affection is very painful. In it, as in glossitis, there is difficulty in opening the mouth and in protruding the tongue; the mucous crest leading to the sublingual gland is equally swollen, red, and infiltrated; there is difficulty of swallowing, and flow of saliva from the mouth, with pain and tenderness about the angle of the jaw. The diagnostic sign which I have found decisive is, the severe pain produced by pressure when the finger, by some manœuvring, is.introduced and pressed against the lingual aspect of the jaw at a point corresponding to the fang of the suspected tooth, and to the extremity of the mylo-hyoid ridge, where a yielding is experienced. The absence of any material swelling of the body of the tongue, or of tenderness there on pressure, will further obviate any likelihood of mistake. Having noticed this affection, I may state that its treatment is equally simple and effective—the opening of the abscess with the point of a bistoury directed carefully outward and downward, while the subsequent extraction of the offending tooth will prevent a recurrence of the mischief. Leeches or other measures directed to arrest of sublingual inflammation are quite superfluous. The eruption of the dens sapientiæ, it may, in passing, be also observed, is often attended by suppuration between the superincumbent gum and the crown of the tooth; it is a painful affection, and some times tedious, and not uncommonly mistaken for rheumatic trismus.

"In a late case in which the system refused ptyalism, under mercury in course of administration for secondary syphilis, the patient, who had absented himself for some days, complaining that his mouth was now very sore, it was supposed that the mineral had taken effect. I found that he was laboring under suppurating gums, depending on the cause now described. The rest of the gums were healthy. Such examples enforce the necessity of actual inspection of the parts. The difficulty of opening the mouth, sometimes amounting almost to impossibility, is the result of the inflamed condition of the mucous membrane, where it covers the base of the adjacent coronoid process. I have found division of the gum down to the crown of the tooth with a sharp gum lancet to be a prompt and perfectly effectual remedy."

"*New Process of Gilding and Silver-plating.*—We learn from *Le Génie Industriel* that a new process of silver-plating and gilding has recently been patented in France by MM. Peyraud and Martin, which has some decided advantages over any processes heretofore in use, as the substances are applied cold with a pencil, and can thus be placed on any part of the object to be plated.

"For gilding, 10 grammes of laminated gold are mixed with 20 grammes of hydrochloric acid and 10 grammes of nitric acid. The liquid thus composed is placed over a moderate fire and stirred constantly until the gold passes into the state of the chloride. It is allowed to cool, and then dissolved in 20 grammes of distilled water. A second liquid is formed by dissolving 60 grammes of the cyanide of potassium in 80 grammes of distilled water. The two liquids are mixed together in a decanter, stirred for twenty minutes, and then filtered. Finally, 100 grammes of whiting, dry and sifted, are mixed with 5 grammes of pulverized cream of tartar. This new powder is dissolved in a portion of the above-described liquid, in sufficient quantity to form a paste of the proper consistency to be spread with a pencil on the object or part to be gilded. The superabundant powder is then removed from the object by washing it and cleaning it with a brush.

"For silver-plating, 10 grammes of nitrate of silver are dissolved in 50 grammes of distilled water; then 25 grammes of cyanide of potassium in 50 grammes of distilled water. The two liquids are mixed in a decanter and stirred during ten minutes, then filtered. Finally, 100 grammes of sifted whiting are mixed with 10 grammes of pulverized cream of tartar and 1 gramme of mercury. This powder and the dissolving liquid are used in the same manner as directed for the gilding operation."—(*Sci. Amer.*)

"*Tempering Steel.*—Each variety of steel requires a different degree of heat, preparatory to plunging it in cold water, for the purpose of hardening. As it is very difficult to tell the degree of heat to which a piece of steel has been raised in a fire, the process called tempering provides for the difficulty. The steel is first heated in a clear fire to the highest temperature it will bear without being permanently injured, and is then cooled so as to impart to it the greatest hardness. It is then ground or polished so as to show a bright surface, and gently reheated until the bright surface shows a certain color. The colors produced by the increasing heat on the bright surface are, in succession, yellow, brown, purple, light blue, dark blue, and black. These shades are used for the following purposes: Yellow for lancets, razors, pen-knives, cold chisels and miners' tools; brown for scissors, chisels, axes, carpenters' tools and pocket-knives; purple for table-knives, saws, swords, gun locks, drill bits and bore bits for iron and metals; and blue for springs, small swords, etc. Articles which are to be softer are made still darker; but when the black shade is reached the steel is annealed and soft. These colors are the result of oxidation. The increasing thickness of the film of oxide which accumulates on the bright surface of the steel is less and less apparent as the heat increases. Steel receives by sudden cooling that extreme degree of hardness combined with tenacity, which places it so incalculably beyond every other material for the manufacture of cutting tools; especially as it likewise admits of a regular gradation from extreme hardness to its softest state when subsequently reheated or tempered. Steel therefore assumes a place in the economy of manufactures unapproachable by any other material; consequently we may safely say that without it, it would be impossible to produce nearly all our finished works in metal and other hard substances.

"In the process of hardening steel, water is by no means essential, as the sole object is to extract its heat rapidly; and the following are examples, commencing with the condition of extreme hardness, and ending with the reverse condition.

"A thin, heated blade placed between the cold hammer and anvil, or other good conductors of heat, becomes perfectly hard. A nearly similar variety of conditions might be referred to, as existing in cast iron in its ordinary state, for some cast iron may be rendered externally as hard as steel, such as chilled iron castings, which are cast in iron moulds."—(*Sci. Amer.*)

"*Fracture of the Lower Jaw.* By H. HOWARD HAYWARD, M.R.C.S.—The importance of the mode of treatment so ably carried out by Mr. James Salter, of Guy's Hospital, as reported in *The Lancet* of the 16th ult. (p. 593,) for the reduction of impacted fractures of the alveolar arch of the superior maxilla, is well worthy of the careful attention not only of surgeon dentists, but general surgeons. The application of such a principle to fractures, is a large extension of the plan of regulating misplaced teeth by elastic metallic pressure, which has been so long in successful operation. At the latter part of Mr. Salter's excellent paper reference is made not only to the much greater difficulty of applying mechanical contrivances to the fractured inferior maxilla, but there is a point which is a far more serious undertaking, viz., maintenance of the apparatus *in situ* comfortably to the patient, until the uniting lymph is firm enough to resist the traction of numerous antagonistic muscles.

"The subjoined abridged account of a case, read by Mr. James R. Lane to the Western Medical Society, and slightly noticed in the journals of the date, of a compound comminuted fracture of the lower jaw, prior to that reported by Mr. Salter, in which the wearing of a metallic socket, fitting the teeth and gums, was not sufficient to maintain the broken ends in exact juxtaposition, on account of the obliquity of the fracture and antagonism of the muscles, perhaps may prove of value to surgery at some future period:—

"John S., aged thirty-two, was admitted into St. Mary's Hospital, under the care of Mr. James Lane, September, 1858. He had sustained several injuries about the head and neck by a fall from a cart, the wheel of which passed over his head, and fractured the lower jaw at the left of the symphysis, between the central and lateral incisors, obliquely downward and outward. The left portion was depressed about three-quarters of an inch, and overlapped by the right. A large spiculum of bone on the right side, including two teeth, was also loose; but the fracture here did not extend to the lower margin. After the failure of all the contrivances, including Lonsdale's apparatus, Mr. James Lane, hoping to modify Lonsdale's splint, called my attention to it, as the setting of the fracture could not be maintained by any of the apparatuses. With the assistance of others the fracture was reduced, and retained *in situ* long enough to take a model in beeswax. A silver plate was made to cap and fit the teeth and the gums before and behind them for a short distance; but I found this did not keep the fractured ends in accurate apposition, as the spasmodic action of the muscles of the left side of the maxilla gradually jerked up the plate, though it fitted accurately. To meet this difficulty, I soldered to the upper surface of the plate, at each side, a doubly-curved silver rod, each of which projected out of his mouth at the angles, and was tied to a light gutta-percha splint beneath the chin. This placed him in a comparative state of comfort, immediately enabling him to feed himself and articulate without pain.

"At the fourth week the splint was removed and the silver rods were cut off. The following week he left the hospital, with the plate in; the 'bite' was perfectly accurate, and the position was well maintained by the temporary callus.

"I accidentally saw him a few months afterwards; he had worn the plate for two or three weeks immediately on leaving the hospital, and subsequent to that only at night. The line of fracture was not detectable; but one of the teeth, where the suppuration of the periosteum had been most extensive, had necrosed, and required removal."—(*Lancet*, July 7.)

MISCELLANY.

In the course of some remarks on the influence of the nervous system over the secretion of the gastric juice, M. C. Bernard observes, (*Med. Times and Gaz.*, August 11:) "When, in our preceding lectures, we directed your attention to the salivary secretion, we stated that this physiological process was to be viewed in the light of a reflex action, that the nervous system was in consequence essentially concerned in the formation of saliva, and that each gland must evidently have been provided with sensitive and motor nerves, specially connected with the process of secretion; and, in the case of each gland, these nerves were distinctly pointed out. In the second place, we discovered that the sympathetic nerve acted in opposition to the motor branches, and was an obstacle to the free action of the gland; and, lastly, that a turgid state of the glandular tissue, an accelerated circulation, a ruddy color of the blood in the veins, which offer, at the same time, arterial pulsations, were invariably the symptoms connected with the active state of these secreting bodies. In the digestive act, the same phenomena are found to coincide with the process of secretion in the gastric glands; the mucous membrane grows turgid and assumes a bright-red color; and, as in the case of the salivary gland, nervous influence is intimately connected with the formation of the gastric juice, a reflex action evidently takes place, since a few drops of an alkaline solution immediately produce a flow of this fluid. Let us, therefore, endeavor to ascertain what nerves are endowed with the property of awakening the dormant activity of these little glands.

"The solar plexus is the source from which all the nervous filaments, which find their way into the stomach, are derived; and this plexus is formed by the pneumogastric and sympathetic nerves. Such, therefore, are the conductors of nervous influence which play a part in the digestive process. The branches which emanate from the solar plexus are distributed, of course, to the muscular coat of the stomach, as well as to the secreting cells; but the contractions which take place in the organ during digestion cannot be separated from the process of secretion itself; these two physiological actions are as inseparably connected with each other as the parotidian secrection with the act of mastication; both of these, as you are well aware, take place under the influence of motor branches of the fifth pair, and no physiologist would attempt to separate the one from the other, as far as nervous influence is concerned. It is not, however, our intention to assert that the contraction of the muscular fibres acts upon the glands by compressing them; the gastric secretion is, in itself, a totally separate and independent process."

In a communication upon the alleged deaths from chloroform, (*ibid.*, August 18,) DR. KIDD invites attention to some of the probable sources of error in attributing the fatal effects to that agent, and makes the following observations on the powerfully depressing influence of emotion: "As to the relation of emotion to this subject, it is a thing of a very conflicting nature; I agree with Mr. Bain that, anatomically considered, emotions are identical with feelings, excess of emotion probably acting like excess of feeling or sensation; and how emotion is further mixed up with reflex action, through the spinal cord, we see every week in midwifery practice, where casual emotion is found to stop or interrupt the complex mechanism of labor. At Sebastopol, in the battles in India, and at Solferino also, Pirogoff and others have also told with amazement how emotion among frightened prisoners wounded stopped or rendered nugatory the ordinary action of chloroform; excess of emotion (fright) necessitated the use of enormous and dangerous quantities of chloroform in some, while all the others of the wounded (not prisoners) presented nothing unusual in their cases, although treated exactly alike and with the same chloroform. How emotion alone, or mere recollection of evil or pain, can cause sudden death, is written in all our works of surgery. It is thus related of Desault that one day as he was about to perform lithotomy, he traced, simply with his thumb-nail, a line on the perineum of the patient, who uttered a shriek and fell back dead. Mr. Stanley tells of a similar case. Chopart, also, one day was about to slit a patient's prepuce; the poor young man fainted and never came to life again. Garengeot gives another instance: a patient with a whitlow, who, shuddering with cold, fell dead. Now let us suppose these four patients had had chloroform, we should have probably lost sight of emotion as a cause of death."

In relation to the fatal results ascribed to idiosyncrasy, DR. KIDD observes: "The second case I wish to refer to, which may be almost termed a case of suicide from chloroform, occurred a short time ago at Doncaster: a poor lady, who some years ago had obtained immense relief from chloroform in neuralgia or hysteria such as no other medicine could afford, had been in the habit of having it administered to her by her daughter, at frequent, though uncertain intervals, for the last four or five years. She had taken it already to insensibility, with perfect safety, not less than twice on the day of her death; but, having again resorted to it late in the evening, in a comparatively small dose, she became asphyxiated. The case shows that chloroform may be taken two hundred times with impunity, and prove fatal the next, or two hundred and first, time; in fact, that chloroform is never free from danger. Indeed, about one in four of all the deaths from chloroform have been in patients who, like this poor lady, had had chloroform with impunity administered several times previously; so that it is probable idiosyncrasy had nothing to do with the fatal occurrence, or death would have occurred when they were first placed under its influence."

In the summary of an interesting paper by MR. HENRY LEE, on the beneficial effects of removing pressure, by trephining, in syphilitic disease of the bones of the skull, it is stated (*ibid.*, Aug. 25,) that "the author directed particular attention to the prolonged, persistent, and recurring ulceration of the skin, which formed one of the most troublesome symptoms in all the cases. In illustration of the cause of these ulcerations he referred to M. Brown-Séquard's experiments, in which it was shown that by cutting off the sympathetic nervous influence from a part the vessels of that part became dilated; and also to M. Magendie's experiments upon the fifth nerve, by which it was shown that ulceration might follow the abstraction of nervous influence. In the third case destruction of the eye had actually followed, as in Magendie's experiments, and as had also been observed by the author in a case of fracture of the base of the skull in which the fifth nerve had been completely paralyzed. M. Brown-Séquard had also shown that, by irritating certain portions of the nervous system, an animal might be rendered liable to epileptic fits. In Case 2 the author attributed the occurrence of the fits to the irritation produced in the membranes of the brain by the continued contact of the diseased bone, and concluded that the removal of even a comparatively small portion of that bone, so diseased, was calculated to relieve the irritation, as it certainly appeared to have done in the cases recorded."

"DR. POCKELS says, (*Varg. Zeit.*, *ibid.*) he cannot sufficiently extol carbonate of potash as an application, in a concentrated form, in chronic diseases of the bones, especially caries and necrosis."

The Paris correspondent of the *Lancet* states that at a meeting of the Acad. of Sciences of that city, "M. BOURGUET presented a paper on the reparation of long bones, as occurring after extensive resections of their shafts. This essay, which possesses considerable merit, and the materials of which are drawn from the inexhaustible mine of clinical observation, tends to establish the following: The new bone formed after removal of part of the shaft of a long bone is shorter and thicker than the old. The presence of the periosteum in its integrity is *desirable*, but *not indispensable* to the reproduction of osseous tissues; as the surrounding textures, such as vessels, muscles, fibrous and areolar tissues, are sufficient of themselves, in the absence of the periosteum, to do the work of regeneration. This last conclusion is, so far as I know, a new view of things, and will require further confirmation before it can be accepted."

In a subsequent letter, the same writer gives the following account of some observations on the effects of disease in modifying the nutrition and development of the nails, which, it will be seen, are analogous to abnormal modifications of the teeth and other parts from a similar cause. "In going round the wards of the Charité with M. Beau, a novice will be not a little puzzled at seeing him scrutinize closely the finger-nails of each newly-admitted patient, telling him occasionally, after a few moments' examination of his cuticular appendage, 'My friend, you had a bad illness so many months ago, a very severe illness, that pulled you down a good deal; and then you had a relapse,' and so on. This sort of inverted palmistry puzzled me sorely at first, and I confess that even the explanation, when given, left me very skeptical as to the infallibility of this retrospective fortune-telling. Nevertheless, although I do not believe in Hume the spirit-medium, any more than in Hahnemann and his microdosic followers, I do believe in this sign of the past as indicated by the nails. If you look at the fingers of a man who had typhus fever three months ago, let us say, you will find on the nails, toward their centre, (at that interval of time,) a transverse furrow, deep and well marked, coinciding with the moment when the check in their nutrition occurred—the depth of the depression being in proportion to the severity of the illness, its breadth with the duration; and the several consecutive relapses (if such occurred) being each notched on the ungual appendices as on so many tally-sticks. Few men know that they have the past history of their own cases so thoroughly at their fingers' ends."

Another correspondent of this journal, in relating his surgical experience in Sicily, says he "found several patients suffering the agony of spasmodic pain from foreign bodies being impacted within a nerve, or in some where the nerves were implicated in a cicatrix. I cut down, in two instances, upon the median and popliteal nerve, and succeeded in taking out some foreign bodies, soothing the pain by a solution of atropine."

In the course of one of a series of instructive lectures, "On Pain and the Therapeutic Influence of Mechanical and Physiological Rest," in the *Lancet*, MR. JOHN HILTON gives the following interesting report of an experiment by Mr. Durham, as illustrative of some of the effects of chloroform and the phenomena of sleep. "A dog having been chloroformed, a portion of bone, about as large as a sixpence, was removed from the parietal region of the skull by means of the trephine; the subjacent dura mater was cut away, and the surface of the brain exposed. As long as the animal continued under the influence of the chloroform, the smaller vessels of the pia mater were turgid with dark-colored blood, and the larger veins were considerably distended. No difference in color between the arteries and veins could be recognized. The exposed portion of the brain manifested a tendency to rise into the opening through the skull. By-and-by the immediate effects of the chloroform passed off, and the animal sank into a comparatively natural and healthy sleep. A very marked change in the appearance of the brain accompanied this change in the state of the animal. As sleep supervened, the vessels gradually emptied themselves; the veins ceased to attract notice by their distention; the exposed surface of the brain sank down to, or below, the level of the opening, and became pale in color. In the course of a short time the animal was roused, and irritated. A blush seemed to start on the surface of the brain; the vessels of the pia mater became fuller and fuller, and of a bright arterial hue. The contrast between the appearance of the brain during this state of functional excitement and the previous state of quiescence was most striking. The more the animal was excited, the fuller of blood did its brain appear to become, and the higher did the exposed portion rise above the general level. When the animal was allowed to return to its state of repose, the brain again sank down, and resumed its pale aspect."

The following historical mörceau is from a review of "Rouyer's Medical Studies on Ancient Rome," in the *N. Am. Med.-Chir. Rev.* for September. "We learn from many epigrams of this poet (Martial) that dental prothesis was in high repute among the Romans. 'Thais has black teeth, Lecania has white ones. Why is this? The former has her own teeth, the latter purchased ones.' The testimony of Martial refers only to the dentistry of the first century of our era; but there are proofs of an earlier period of this art in the tenth of the Laws of the Twelve Tables, which date as early as 450 years before Christ. To the prohibition to bury gold with the dead an exception was made in the case of that which was found in the mouth of the deceased for the purpose of fastening the teeth together."

The necessity of supplying the living organism with the different elements of which it is composed, in order to preserve its healthy status, is so obvious as scarcely to require comment; yet it is not so fully appreciated as to enforce general attention to such means of preventing as well as removing disease. The frequency of organic derangement from a deficiency of the materials afforded by the acidulous fruits, and the beneficial effects resulting from a due supply thereof, has recently created quite a diversion of invalids to Germany and Switzerland in order to indulge in what is called the "Grape cure." While, however, such articles of aliment are advantageous to the general system, they are apt, from the excess of acid thus introduced into the mouth, to act injuriously upon the teeth when used so freely as indicated by this method. In a communication to the *Lancet*, these destructive effects are thus alluded to by Dr. Spencer Thomson. "In your remarks upon the Grape cure at Vevey in last week's *Lancet* nothing is said of the injurious effect which the continued grape-eating exerts upon the teeth. I have seen the enamel of the front incisors very greatly corroded in a patient of my own, who had spent some time at Vevey. This must be a serious objection to the unlimited use of a fruit which, taken in moderation, is so abundantly wholesome."

Dr. Walter Channing is publishing, in the *Boston Med. and Surg. Jour.*, a series of very interesting papers on those cases of prolonged ill health and confinement to bed, in consequence of imaginary rather than real disease, or inability for voluntary action. In one of these he thus alludes to a simulated form of muscular contraction, which may be temporarily overcome by force, but can only be permanently corrected by voluntary effort on the part of the patient. "A contraction, however, which nearly resembles those of the bed case, is that which occurs to the muscles of the lower jaw, and by which the mouth becomes gradually but completely and permanently shut. Here is no disease of the muscles. Their action is exaggerated, simply because they have nothing else to do but to contract. It is quite curious to observe that however slow such a process may be, it will surely in time be perfect. Now this contraction may be overcome, and by pressure applied in the only way it can be used in this particular case. It may be interrupted or continuous pressure, as circumstances indicate, or rather permit. Prof. Mott, of New York, has been successful in the use of violent force, in overcoming the obstacles to recovery in cases of chronic shut-mouth, and has proved how true is that principle which finds relief in natural living functions, rather than in artificial supports. As soon as a morbidly contracted muscle is straightened, the muscles which have been useless are called into action. They must and will act if alive, and in this action is the first and most important step to recovery."

In an article translated from *Lo Sperimentale*, on the diseases of printers (*Boston Med. and Surg. Jour.*, Sept. 6,) it is stated that "DR. VAN HOLSBEEK having enumerated the diseases resulting from overwork, from intemperance, want of cleanliness, vicious habits, protracted watching, etc., proceeds to speak of the morbid affections more especially belonging to the printer's art. Fissures of the lips, of varying depths, are of frequent occurrence; at other times tumors are developed on the inner surface of the same parts, which are nothing else than follicles, whose excretory ducts are closed. These tumors sometimes inflame, become highly painful, rapidly ulcerate, and assume a cancerous appearance. Such affections of the lip are owing to the habit some compositors have of putting into their mouth the types still moist with the fluid which has served to wash them."

During a discussion before the Boston Soc. for Med. Improvement, on the swallowing of stones and other indigestible substances, (*ibid.*) "DR. TYLER said it was the commonest thing for patients at the McLean Asylum to swallow small objects, such as pieces of glass, coal, stone, thimbles, etc. Lately, a woman swallowed a crochet-needle, which was voided without inconvenience. Silver thimbles were quite a common article of diet. The treatment generally employed was to give plenty of farina-gruel, or porridge, without resorting to medicine. Among some of the patients was a curious propensity to swallow toads, and there is now in the Asylum a man who has swallowed half a dozen live toads, without injury."

Championnière's Jour. of Pract. Med. and Surg. says, that "at a recent conference held at the Military Hospital at Liége, Mr. Decondé observed, with regard to the singular phenomenon of nocturnal pain in diseases of the eye, that syphilitic pains occurred generally between eleven at night and one in the morning, rheumatic pains at an earlier hour, and neuralgia in the course of the evening. Hence the hour at which the suffering is complained of, may form a not unimportant element of the diagnosis, and assist in discriminating syphilitic, fibrous, and nervous, ophthalmia from each other;" and probably also dental and other forms of neuralgia and inflammation.

In a review of the January number of the *Journal de la Physiologie* in the *Amer. Med. Monthly* for September, it is stated that it contains a "short article by Brown-Séquard, showing the independence of the vital properties of the motor nerves. In support of this he adduces the fact that the irritability of a motor nerve which has been entirely detached from its centre will return after it has been completely exhausted by continued irritation. It is impossible of course, that this return of its vital property should come from any other part of the nervous system. He also brings forward an experiment in which the vital properties of a nerve were brought back under the influence of blood charged with oxygen, when this nerve was completely isolated from the nervous centres; this was done by injecting the blood into the vessels of a limb of an animal, after the nervous irritability had entirely disappeared. At the end of ten minutes the vital properties of the nerve, as shown by muscular contraction following its irritation, were completely re-established."

The *Cincinnati Lancet and Observer* claims for the eminent PROF. R. D. MUSSEY the priority of the determination of the fact that the bones and teeth of a fœtus can be colored by feeding a pregnant animal on madder. It establishes this claim by extracts from a paper on the subject, published by Dr. M. in the *Amer. Jour. of Med. Sciences* for 1829, of which the following are examples: "'The following experiments, in so far as I am informed, are new, will serve to show that with one of the tribes of lower animals, whatever be the nature of the communication between the vessels of the uterus and those of the ovum, it does not forbid the passage of a foreign substance from one to the other. I caused a sow, during the last eight weeks of gestation, to be fed with madder, by mixing daily about three or four ounces of it with the food of the animal. On the day the farrow was produced several of the pigs were killed, and their bones inspected. Every bone was strongly tinged with red. The teeth were stained of a delicate pink color. The engraving exhibits tolerably well the madder upon the teeth, and upon one of the larger bones. In another experiment more recently made, a sow—within a month, as near as could be ascertained, of bringing forth her farrow—was made to eat four ounces of madder daily for twenty days, and was then bled to death. The urine of the animal was very highly colored, but was much deepened by the addition of a small quantity of the solution of potash. The serum of the blood, too, after the red particles were allowed as much as possible to subside, was of a red color, which was suddenly heightened by the addition of the alkali. Half a dozen of nearly full-grown pigs were found in the uterus. * * * * In this last experiment with the sow, the teeth and other bones of the fœtal pigs exhibited the red color quite as strongly as did those of the first experiment, in which the mother was fed eight weeks upon madder, instead of twenty days. The bones of the sow, in the last experiment, were dyed of a fine red, approaching scarlet.'"

In a notice of Forget's prize essay, the editor of the *Louisville Med. Journal*, Dr. Colescott, relates the following case of dental anomaly: "We may say here that one of the first operations on the upper jaw ever seen by us was for what proved to be a cyst, containing a beautifully formed tooth (a canine, if we remember rightly,) of full size. The tooth had grown into the jaw, rather than out of it, the crown looking upward instead of downward."

In one of a series of interesting papers on analysis, in the *Chemist and Druggist*, Dr. Noad thus notices some of the processes for determining the purity of certain metals: "When a bead of gold or silver, or other noble metal, is obtained before the blow-pipe, the operation of *cupellation* is resorted to in order to ascertain whether the metal is really pure, or is contaminated with an inferior metal. The process consists in fusing the suspected alloy on charcoal with pure lead, and then heating the resulting bead in the oxidating flame upon a substance sufficiently porous to absorb the fused oxide produced by ignition. Griffin gives the following method of proceeding: Take a small quantity of very finely powdered bone-ashes, mix into a stiff paste with a few drops of water and a little carbonate of soda, and insert it into a small hole about one-fourth of an inch deep bored in a piece of charcoal; smooth the surface with the end of a pestle, and slowly dry the mass over a lamp; place the alloyed metal on this *cupel*, and heat for a considerable time in the oxidating flame. All the oxidable metals present thus become oxidized, and form fusible compounds which sink into the cupel; while the gold, silver, and other noble metals remain in a brilliant globule on the surface. This method of assaying is so delicate, that it almost always produces a bead of silver when the common lead of commerce is submitted to trial."

The *Scientific Amer.* says that a correspondent of the *London Mechanics' Magazine* gives the following method for precipitating platina upon the interior of rifle barrels to prevent rusting. The same plan may be of practical application for the preservation of other instruments employed for less destructive and more peaceable purposes. "If nitro-muriate of platina be mixed with one-fourth of its bulk of ether, and the mixture then allowed to settle, the platina solution will fall to the bottom, when the lighter liquid may be poured off. The platina solution is then poured into a well-cleaned rifle barrel, when a galvanic action quickly takes place, and a thin coat of platina is deposited upon the surface of the barrel, and prevents it from rusting."

It is stated (*ibid.*) that "a patent has been issued to I. L. Pitman, of London, for the following peculiar vulcanizing process. Preparations of india-rubber or gutta-percha and sulphur are immersed in a bath of metallic alloy at its fusing point, and they are thus far more quickly vulcanized than by steam or oven heat, according to the common methods. An alloy of 50 parts bismuth, 31 of lead, and 19 of tin, will fuse at 203° Fah., and into this, articles which are to be vulcanized at a low temperature may be plunged, in an open iron vessel. An alloy bath that fuses at 203° Fah. may be used to immerse the article in first, for the purpose of driving off the moisture, then they may be lifted and plunged into a second bath containing more lead, and the fusing temperature of which may be 250°, at which heat it may be continued for about two hours, when the article will be *cured.* In the vulcanization of fine soft goods, it is preferred to raise the heat of the bath to 225° during the first hour, then raise it gradually up to 275°, taking altogether five hours to do this. Coarse goods may be vulcanized in two hours, by raising the metallic bath up to the temperature of 300°. This is certainly a true vulcanizing process."

In a paper on the impurities of commercial zinc, by Chas. W. Eliot and Frank H. Storer, a resumé of which is given in the *Amer. Jour. of Pharmacy* for Sept., it is stated that "a qualitative examination of the residue left by these zincs, when treated with dilute acids, showed that they consisted chiefly of *metallic lead.* In fact, the authors have arrived at the conclusion that lead is the chief impurity in commercial zinc, and that carbon, tin, copper, iron, arsenic and other impurities found in it by previous observers, occur either in very minute quantities, or rarely, and doubtless accidentally."

The *Druggist* gives the following formulæ for Gauger's dental balsam, said to be very popular in St. Petersburg for temporarily closing cavities. "Dissolve ℥ij of picked mastic in ℥iij of absolute alcohol. Pour the solution into a stoppered bottle capable of containing 2 lbs., and add of dried balsam of Tolu ℥ix. Promote the solution by a gentle heat, and frequently shake the stoppered bottle. When the latter substance is dissolved, place the whole in a warm situation, to allow the undissolved particles to deposit. This balsam is viscid, and forms, when exposed to the air, a firm mass, which is neither acted upon by the saliva nor by other watery liquids. To prevent toothache, arising from exposure of the nerve, the decayed tooth should be well dried by means of cotton, or blotting-paper, and a piece of cotton, imbued with the balsam, is to be carefully inserted into the cavity."

A great number of remedies are extolled for the cure of what is commonly called "toothache," under the false impression that it is always dependent upon the same condition. The following, from the *Druggists' Circular*, is one of the latest formulæ for that purpose: "Under the title of Dr. Breslauer's Idiaton, a remedy for *toothache* has become very popular in Berlin, and has even received a license from the Prussian Department of Schools, although a secret remedy. Numerous analyses of it have been published, giving uniformly the following mode of preparation.: Dissolve by shaking one part of bruised mastic in a mixture of eight parts of chloroform, one of rectified spirits of turpentine, and one of *spiritus ammoniæ* (Prussian.) The latter preparation should be as fresh as possible and saturated with 10 per cent. of gaseous ammonia, and its specific gravity not higher than 810, otherwise the mixture will not become clear. It is recommended for this purpose to prepare the spirit with alcohol of about 810 sp. gr. (Cologne spirits.) This remedy is applied in the following manner: The teeth are well cleansed with a brush, then rapidly dried with a little cotton, and the cavity filled with a ball of wadding moistened with some drops of the tincture. Even should the pain vanish, as is the case in most instances, the dose is to be repeated after the lapse of five or ten minutes, which insures against the reappearance of the pain. If the tooth is not a hollow one, a few drops are merely rubbed on the gums with the handkerchief or some lint."

"The adulteration of wax with stearic acid is discovered (*ibid.*) by shaking the suspected wax with aq. ammoniæ, or heating it with limewater. If the wax be pure both these liquors will remain clear; if otherwise, they will form a milk, a thin solution of a soap of stearic acid."

BIBLIOGRAPHICAL.

Announcement of the Polytechnic College of the State of Pennsylvania. The eighth annual announcement of this valuable institution has been received. It contains a fine engraving of the college building, a list of the officers and students, with the rules and regulations of the institution, and a general outline of the course of study pursued therein. Although but a comparatively few years in existence, this college has already attained such a high rank as to place it among the foremost of the educational institutions of the country. It is, indeed, in some respects superior to the best of them, inasmuch as it makes a specialty of applied science, thus combining both theory and practice. Hence while "giving a course of instruction in the exact sciences, surpassed by that of no university in the country," it teaches their practical application to the industrial arts, and thus directly qualifies its students for the immediate duties of active life. Its curriculum of study comprises engineering, mechanics and drawing, mathematics, geology, mineralogy, general and applied chemistry, industrial jurisprudence, and modern languages and literature, to which is being added agriculture and architecture. The value and importance of such an institution to society is so great that it should enlist the sympathies and active efforts of all true friends of progress, in order to more rapidly enlarge its capacity for usefulness and increase its practical efficiency. Detailed information, respecting this institution, may be obtained from its President, Alfred L. Kennedy, M.D., West Penn Square, Philadelphia.

THE

DENTAL COSMOS.

NEW SERIES.

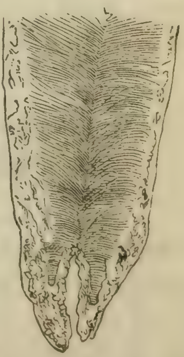
Vol. II. PHILADELPHIA, NOVEMBER, 1860. No. 4.

ORIGINAL COMMUNICATIONS.

PRACTICAL HINTS.

BY J. D. WHITE.

There seems to be a great difference of opinion among dentists as to the propriety of removing a nerve from a tooth when it is exposed, and even among those who propose to remove it, there is some difference as to how much of it should be removed. Now we do not, in this paper, intend to call in question the practice of any one, but will endeavor to explain *why* we do not remove a pulp to the *apex of the root,* if we can help it; but in some teeth we remove more of it than in others. The object of destroying a pulp is to get rid of the organ, as it, after exposure, is the seat of disease; but in doing so, it should be the aim of the operator to avoid wounding the external membrane, for in that is the seat of future trouble. The ground of correct practice is, then, *how much* shall be removed, and *why.* We give here a drawing of the root of a front tooth. It will be seen that the cementum not only caps over the apex of the root, but actually dips down into the canal of the root a short distance. Now all agree, we believe, that cementum is analogous to bone in its structure, and that it grades off between the dentine and true bone with more vascularity than the former and less than the latter, and in this way the life of the tooth, or its apex at least, is preserved, even when the main body of the pulp is diseased or destroyed. The apex of the root of a tooth is its life, which holds it to the body, like the stem of a piece of fruit holds it to the tree; and it is here that alveolar abscess always begins. It is the heart of the tooth, and when that is diseased, the health of the tooth is precarious. The root of a tooth is not a solid tube, like glass; but the nearer we approach the apex the more vas-



cular it becomes, and when the cementum is approached, the circulation between the outer and inner surfaces mingles by anastomosis, and when the nerve is removed to the very apex, the whole normal circulation of the part is destroyed, and disease may set in. There is more than one orifice observable at or near the apex of a root, especially in young teeth; this can be demonstrated without the microscope, if a very simple experiment is performed, when a young tooth is extracted in which the pulp is living: plug up the main opening at the end of the root, after drilling into it a short distance, then force an instrument into the pulp cavity through the orifice of decay, and you will find that blood will escape at many points. Now, if such a tooth has the nerve and blood-vessels destroyed, to the very apex, a sponginess of the external membrane takes place, and the tooth cannot be saved without an abscess. Now we take away as much of the pulp of a tooth as we *can* without going to the end of the root, as we have said before, with an instrument with which we can work with facility, and that seems to be as far as we ought to go; because the fragment left is the neutral ground we have before spoken of, and, as far as our experience goes, the short fragment thus left will remain for years, or be absorbed as the parts accommodate themselves to their new condition, without producing sufficient inflammation to establish abscess. To disturb the circulation of the apex of a root of a tooth suddenly is too much for it to bear or recover from without giving trouble, and when the external membrane is involved it requires a long time to become healthy. We know very well that in some temperaments a tooth lingers a long time in a doubtful condition, on account of a little fullness about the end of the root, before the parts have adapted themselves to the interrupted circulation. Whatever exudation of blood or serum there is into a pulp cavity, either from the immediate apex of the root or the parietes of the canal, it must escape through the natural opening and cavity of decay; hence it is bad practice to plug a tooth until it is *dry*, and the end of the root comfortable.

(To be continued.)

A RIDICULOUS MISTAKE IN DIAGNOSIS.

BY J. D. WHITE.

WE placed in an upper set of artificial teeth for a lady patient about one year since, but on account of the shrinking of the gums it became necessary to refit the plate about four weeks ago. We expected to retain the case in our hands about two days. The teeth were left with us in the morning about eight o'clock to be finished the next day by five, but, to our surprise, at ten, the next day, a lady called to ascertain if the teeth could not be finished before five, as the patient had been taken very ill indeed early that morning, with *paralysis* of the lower jaw and tongue, and it gave the face such a ghastly look that they wished the teeth as soon as possible to place in the mouth before she would die, and they did not think she would live until night. The teeth were finished by one o'clock, and dispatched at once to the patient by the hands of an assistant, but the patient was so very ill that the assistant could not be permitted to see her, so he returned with the teeth. But the next morning a little girl called for the teeth, with the cheerful intelligence that the patient had entirely recovered; that instead of it having been *paralysis*, that it was *dislocation* of the *lower jaw* from incautiously yawning; but the mistake was not discovered until a second doctor was called in, and the patient had taken the usual remedies for paralysis, together with having the nape of the neck well scarified and six cups applied.

THE ANATOMY, PHYSIOLOGY, PATHOLOGY, AND REMEDIAL TREATMENT OF THE FIFTH PAIR OF NERVES.

BY J. H. M'QUILLEN, D.D.S.

[CONCLUDED.]

SATISFIED that no pathological doctrines can command confidence which are not founded upon accurate views of the structure and functions of a diseased part, thus far, in the presentation of this subject, attention has only been directed to the anatomy and physiology of the fifth pair; having dwelt sufficiently on those points to give at least a general view of their structure and functions, as a natural sequence the pathology of this nerve, and the sympathetic derangements frequently induced in other parts of the organism under such circumstances, very properly commands attention.

During the period of dentition the fifth pair is always more or less affected, and in excitable states of the nervous centres the irritation of it consequent upon the pressure of the teeth often gives rise to convulsions and other disturbances of the general organism, so common to that period of childhood. Indeed, the diseases pertaining to this period may be dependent, and in many instances are entirely so, upon the local irritation attending the process being transmitted through either the *cerebro-spinal system of nerves*, producing convulsive diseases in the motor apparatus; or through the *sympathetic nerve*, causing derangement of the alimentary or pulmonary organs.

In illustration of this, two interesting cases came under my notice; one of which, a little girl aged two and a half years, was seized, one morning in the fall of the year, with slight convulsions, which increased in number and severity toward the close of day. Taking into consideration the season of the year, the location of the residence in a region which was formerly regarded as eminently malarious, and the fact that intermittent fever was then quite prevalent, the family physician and myself were disposed to regard it as a case of fever and ague; an examination of the mouth, however, was made, and the gum over the right and left lower second molars being found quite tumid, free crucial incisions of it were made with the lancet. Immediate relief was afforded, and no return of the convulsions supervened.

In the second case, a little boy, about the same age, was attacked with spasmodic croup, an affection which consists in a sudden choking fit, caused by spasm of the muscles that close the glottis, and differing from croup in the fact that there is no fever nor any morbid appearances about the throat; the disorder being purely functional, and having its origin in irritation of a distant part, which derives its nerves from the same region of the cerebro-spinal centres with the larynx. That such was the case in this instance, was proved by the fact that soon after lancing the gums over the deciduous molars the difficulty disappeared.

The advice that Dr. J. K. Mitchell endeavored to impress upon the minds of his students cannot be too strongly advocated. It was, that when called to the side of a little sufferer, laboring under whatever affection it may—whether cerebral, thoracic, or abdominal—during the period of dentition, to immediately examine the mouth of the patient, and if there should be the slightest evidence of the eruption of a tooth, to employ the lancet at once, making, in the case of the molars, decided crucial incisions.

The affection most frequently presented by the fifth pair, occurring in whatever branch of the nerve it may, and whether originating at the periphery or centre, can be classified under the general head of *neuralgia*—a term, it is true, often used in the most vague and indefinite manner by medical and dental practitioners to conceal from the patient or friends their want of familiarity with the cause of the trouble which they are called upon to relieve. In support of this, numerous cases have presented themselves in which patients were subjected for weeks and months to the most varied constitutional treatment, by the medical practitioner, when all that was demanded was the removal of an exposed dental pulp, or possibly a tooth; and, on the other hand, many sound and valuable teeth have been sacrificed by the dental practitioner, when the source of trouble may have been in some other part of the nerve, or even in a distant organ. Frequently, it is true, the most experienced and accurate observers have been unable to discover the cause or satisfactorily account for the phenomena presented in this affection during the life of the patient; but, fortunately for science, in some instances the *post-mortem* examination has revealed in the clearest manner the deep-seated cause of mischief.

In employing *neuralgia* as a generic term for the painful affections known as *tic douloureux* and *odontalgia*, it is merely used as the verbal definition of a symptom—pain in a nerve. Of this pain there are different degrees of severity experienced, sometimes being moderate, and at others unendurable; the duration varying from intervals of a few seconds to a day, or every other day, or even a much longer interval of time. When severe, it usually comes on suddenly, with a sharp, darting or tearing character, and is either confined to one spot, or it may extend to all of the branches of one side of the head and face. In attempting to discover the cause of this very painful affection, the origin, distribution, and sympathetic connections of the nerve should be constantly borne in remembrance. Thus it may have a peripheral, a central, a reflex, or a general origin.

Peripheral origin.—Prolonged irritation of the terminal extremity of one of the branches, as in exposure of the dental pulp to variations of temperature, the contact of foreign bodies; or in pressure upon the dental pulp, as during the period of primary or secondary dentition.

Central origin may be owing to pressure upon the nerve or one of its branches, from the growth of a tumor, or a spicula of bone, or the periosteal or osteal thickening of the osseous foramen through which the different branches of the nerve emerge from the cavity of the cranium.

Reflex origin may be due to the irritation in some distant organ exciting sympathetic pain in the fifth pair, or *vice versa*, and in the latter frequently with considerable disturbance of the function of the parts.

General origin.—Depressing influences of all kinds are especially likely to produce it; thus, mental depression, debilitating diseases, exposure to malaria or inclement weather, or sudden suppression of any of the important secretions, or of the catamenial discharge, are each and all prolific causes.

By some writers it is asserted that although considerable attention has been paid to the morbid anatomy of nerves affected with neuralgia, nothing has been made out in this direction which throws any light on the nature of the disorder. Dr. Carnochan, however, states that in three cases in which he exsected the second branch of the fifth pair of nerves, he found the exsected portion red, vascular, engorged, and considerably enlarged; hence he regards vascular engorgement or inflammation, with some of its consequences, of the neurilemma alone, or of it and the nerve together, by whatever cause produced, as the condition which constitutes the pathological changes in the trunk.

Arising, as *neuralgia* does, from such a variety of causes, the diagnosis, though usually effected without much difficulty, is, as already stated, in some cases quite embarrassing. What increases the difficulty in making out these nervous pains is, that they may be produced by some source of irritation situated at a distance from the part in which the pain is felt. As a familiar illustration of this position, if the ulnar nerve is struck at the elbow, a peculiar tingling sensation is felt, not in the part struck, but in the sentient extremity of the same nerve distributed to the little finger. This example proves how necessary it is, when no cause of pain can be found in the part complained of by the patient, to look for the source of irritation in another portion of nerve, or in some distant organ.

In by far the vast majority of cases, neuralgia of the fifth pair has a peripheral origin, resulting from caries of the teeth, and denominated *odontalgia.* Of this there are three varieties: true, false, and sympthetic toothache; and it is in diagnosing these varieties that the ability, judgment, and experience of the dentist is demonstrated. It is also a subject well worthy of the careful consideration of the medical practitioner. The peculiarities presented and the manner of diagnosing the different varieties is as follows:—

Odontitis.—True toothache, or inflammation of the dental pulp, is demonstrated by the following evidence: pain, severe and constant, and usually confined to the diseased organ, but not unfrequently affecting other branches of the fifth pair distributed to the side of the head and face; the pressure of foreign substances, such as particles of food, the edge of an excavator, or the point of a probe, upon the exposed pulp, and exposure to sudden variations of temperature, either of air or fluids, increases the pain, which becomes more intense toward and during the night; added to this may be the visible exposure of the pulp, or, when that is not accurately defined, the oozing of blood or serum into the cavity of decay. In doubtful cases, if on packing a pledget of cotton into the cavity, after the caries have been removed, the pain is increased, and continues after the removal of the cotton, the pulp is exposed; but should it lessen in a few seconds and eventually cease, a thin covering of dentine will be found protecting the pulp.

Periodontitis.—False toothache, or inflammation of the periodental membrane of the fang, like inflammation in other parts of the body, is divisible into three stages, viz., simple vascular excitement, active congestion, and true inflammation. In the first stage, which is simply a hyperæmic condition of the capillary vessels of the membrane, the circulation through the part proceeding at the same time with unwonted velocity, there is merely a *slight amount of tenderness, which is increased by striking sharply on the affected tooth with the handle of an instrument.* A sense of relief is obtained by gradual and continued pressure upon the tooth, which, however, on being removed, is followed by a recurrence of the tenderness. Should the inflammatory action not cease here, but proceed, *active congestion* will be established, the capillary vessels of the part becoming more and more distended, until farther distention is no longer possible, owing to the confined locality of the tissue; *the most excruciating pain is now experienced, and along with it intolerance of the slightest pressure. On this account, closure of the* *teeth is avoided, as it but aggravates the evil. Owing to the distention of the blood-vessels of the membrane, the tooth is forced slightly out of its socket, and thus feels longer and looser than its neighbors.*

The pain arising from odontitis or periodontitis is not always located in the seat of difficulty, but is frequently referred by the patient to a perfectly sound tooth, thus constituting sympathetic toothache; for instance, it is not an unusual circumstance for patients to direct attention to a superior central incisor as the cause of excruciating suffering, which, on careful examination, will be found perfectly sound; every argument to convince the patient that such is the case proves unavailing, however, until in the course of the examination the operator touches an exposed pulp in a canine, a bicuspid, a first or second molar, or a wisdom tooth, in the upper jaw, or possibly even in the lower.

The sympathetic irritation arising from odontitis or periodontitis, when extending beyond the dental organs to other parts of the fifth pair, may either be located in the face, simulating tic douleureux, or it may, as in the following case, mentioned by Lawrence, not only induce intense pain in the eye, but also bring on impaired vision, or amaurosis.

"*Amaurosis caused by a carious tooth.*—F. P., thirty years of age, possessing a good constitution, and enjoying good health, with the exception of pains in the head and limbs, which never lasted long, suddenly experienced, in the autumn of 1825, a violent pain shooting from the left temple to the eye and the side of the face; he ascribed it to cold. This pain lasted several days, then lessened, and reappeared from time to time without being sufficiently severe to induce the patient to seek medical aid. In about two months it suddenly increased in intensity, occupying the eye particularly with a feeling as if it would pass out of the orbit. F. P. now discovered that he was blind with that eye, and applied to a neighboring physician, whose treatment, continued for two months, did no good. The pain, however, was no longer continual; it assumed a periodical character, leaving the patient easy for some hours in the day. At the end of the following six months the pain increased, the cheek swelled; some spoonsful of bloody matter were discharged by a spontaneous opening in the lower eyelid, after which the swelling subsided, and the pains nearly disappeared, although the blindness remained complete. The discharge was renewed from time to time during the following six months, and there was no great suffering. But in the autumn and winter (1826) the pain, particularly in the eye, became so violent, that F. P. came to Wilna in the beginning of 1827, determined to have the organ extirpated, if no other remedy could be found. Professor Galenzowski found the left eye totally insensible to light, with the pupil dilated, and no other visible alteration. The pain, not then so severe, consisted in violent occasional pricking or darting sensations in the left temple, and parts round the eye. There was discharge from the lower eyelid. The first molar tooth of the left side was carious; it had not caused much uneasiness; and the toothache, when it existed, had not coincided with the pains in the temple and eye. The professor determined on removing this tooth, and having done so, was surprised to see a foreign body at the extremity of the fang. When drawn out, it proved to be a small splinter of wood, about three lines in length, which had traversed the centre of the tooth, and had probably been introduced in picking the teeth. A probe was passed from the socket into the antrum, from which a few drops of thin, purulent fluid escaped. The pain ceased almost entirely, and on the same evening the eye began to be sensible to light. Vision gradually improved, so that on the ninth day the patient could see as well with the left eye as with the right, after a blindness of thirteen months; on the eleventh day he left Wilna, to return to his family."

Numerous cases might be cited in which amaurosis had resulted from dental irritation, and been relieved by the extraction of the diseased teeth. Of these it will suffice to refer to one or two only. Mr. Tavers, for instance, saw "an incipient amaurosis distinctly arrested by the extraction of a diseased tooth, when the delay of a similar operation had occasioned gutta serena, or total blindness, on the opposite side, two years before." Dr. Watson states "that the son of a physician of his acquaintance, in London, became blind in one eye on two or three occasions, without obvious cause, and with no visible change in the organ, and the blindness on each occasion went off, apparently in consequence of the extraction of some teeth which had grown irregularly."

On different occasions, cases have come under my own notice in which the most excruciating pain in the eye has been complained of by patients, which unquestionably arose from dental irritation, as it passed off with proper treatment of the teeth. The only case of perverted function of the eye, however, that my attention has been directed to by a patient, was in the case of a gentleman, who stated that many years ago when under the hands of another operator, he had a right upper central incisor treated, which was very sensitive and caused considerable pain in the right side of the face and eye; immediately after the operation, he found that he had an attack of strabismus—a difficulty which he labored under, to a slight degree, in childhood, but which had passed off entirely. The strabismus, accompanying the operation, continued for a few days only, when it gradually disappeared.

If, after a careful examination of the dental organs, no cause for the terrible neuralgic pains, known as *tic douleureux*, can be found in the peripheral extremities of the nerve, it must be referred to one of the many causes already alluded to. Of those cases having a centeral origin, it must be evident to all that the probabilities of a cure are very slight, on account of the impossibility of reaching them with remedial agencies. And it is in these cases where the suffering of the patient is most terrible, their quivering features and restless limbs indicating that the acute bodily pang is indeed hard to bear. The pain is usually restricted to one of the three branches, though sometimes two, and in others all of them are implicated. The second branch of the fifth pair is, perhaps, more frequently affected than either the first or third.

Apparently the most trivial causes are often sufficient to provoke or renew paroxysms of suffering in this affection. Thus the necessary movements of the face in speaking or eating, a slight touch, a current of air upon the face, or a knock at the door, are sufficient to start it. Individuals whose powers have been broken by advancing years or debilitating diseases, and those who are pale and asthenic, are most apt to be victims. Derangement of the digestive organs frequently accompanies, and, in some instances, is the exciting cause of this difficulty. An interesting case has been reported by Dr. Suesserott, in which the patient had a number of teeth removed, and was subjected to a long-continued course of constitutional treatment without any benefit, until Dr. S. discovered that he was in the habit of swallowing his food, meats, etc., in large pieces, and without any attempt at mastication. On ascertaining this fact, he was directed to pay proper attention to the comminution of his food, and this was followed by the most happy results, the neuralgic affection of the face soon disappearing altogether.

In the treatment of this affection, the first indication, of course, is to remove the exciting cause. When this is dependent upon *odontitis*, the application of the arsenical paste to the exposed pulp and the removal of this on the following day, or, when due to *periodontitis*, the employment of leeches to the gum, and the administration of a mild cathartic, may prove all-sufficient. But if it has a more complicated origin, the endeavor must be made to correct, if possible, whatever is amiss in the system at large, or in the state of particular functions.

In cases where there is a weakened, debilitated condition of the system, the employment of tonics will be found quite valuable; of these the carbonate of iron has generally been looked upon almost as a specific; and the beneficial effects of this remedy is supposed to be owing to its giving firmness to the nervous system, by increasing the quantity of red blood that circulates in it. Combined with the iron, local applications to the affected part, of belladonna, and aconite, have been tried with advantage. The internal exhibition of narcotics may also be demanded where there is little or no disposition to sleep on retiring to bed. In cases of an intermittent character dependent upon malarious influences, sulphate of quinia or Fowler's solution will be found most reliable.

When everything has been done toward improving the general health without affording any relief in the local difficulty, recourse may be had to topical expedients, such as division of the trunk of the painful nerve, if possible, between the seat of irritation and the brain. With this object in view, many years ago, division of the infra-orbital nerve, as it emerges from the foramen, was advocated and practiced to a considerable extent. The relief afforded, however, appears to have been very slight and transitory, and in the majority of cases there was almost invariably a return of the suffering.

In the case of Dr. Pemberton, whose sufferings are described as of the most aggravated character, division of all the branches was made by Sir Astley Cooper, but without avail. This practice, though still pursued, has been to a great extent abandoned, from a conviction that the seat of the difficulty is not reached by it.

Within the past four years, Dr. Carnochan has advocated exsection of the trunk of the second branch of the fifth pair, beyond the ganglion of Meckel, removing at the same time the ganglion, or insulating it and its branches from the encephalon. This operation, which he has performed on three different occasions, is quite a formidable one, and when the cause of suffering is posterior to the ganglion, will prove as unavailing as section of the peripheral extremity of the nerve. The operation, as performed by him, is as follows: The integuments of the cheek are dissected away from the superior maxilla so as to completely expose the anterior wall of the antrum. The anterior and posterior walls of the antrum are then perforated by means of the trephine and chisels. By this means an opening having been made into the spheno-maxillary fossa, the ganglion of Meckel is readily reached and removed. A portion of the inferior maxillary nerve about two inches in length is removed at the same time. Dr. Carnochan states that in the three cases performed by him, the relief afforded by the operation has continued from that period.

Excision of the inferior dental branch of the lower maxillary nerve has also been frequently performed in cases where the pain has been confined to the lower jaw, affording, according to the statement of operators, prompt and enduring relief. In performing this operation an incision is first made through the integuments over the ramus of the lower jaw. The nerve is then exposed by applying the crown of a trephine upon the bone at a point immediately below the entrance of the nerve into the dental canal.

SPRINGING PLATES IN SOLDERING.

BY A. BERRY, D.D.S.

In the Dental Cosmos for April last is an article on soldering without warping the plates. Probably the process given is advantageous, but perhaps it does not entirely obviate the difficulty, as no doubt the springing of plates in soldering is caused mainly by the contraction of the solder in cooling. I have heard several dentists say, "I never have any trouble with springing of plates in soldering;" to which I always incline to reply, "Happy souls!"

Having tried many of the prescribed preventives of this evil, and made most of my full upper plates for years of the coin in $20 pieces rolled without melting, putting up the teeth for soldering in the copper case invented by Dr. Chase, of Vermont, and given to the profession several years ago, which I think beneficial, and placing the teeth a short distance apart, still I never solder a full upper set without warping the plate, and sometimes so as to produce trouble.

If any one has a mode of entirely preventing the springing of plates in soldering, he would confer a great benefit on the profession by publishing it.

RAYMOND, MISS.

SHEDDING DECIDUOUS TEETH.

BY N. H. TULLOSS, D.D.S.

THE following case was treated by me very recently, and which, if space can be found for it in the pages of the DENTAL COSMOS, may be of interest—not that it is very uncommon for persons to retain some of their deciduous teeth through life, or up to an advanced age, but to have them replaced at so late a period is rather an exception to the general rule.

Mr. H., aged thirty years, called at my office, June 10, 1860, to have a tooth extracted. It was a right superior cuspidatus, and on examination I discovered it to be a deciduous tooth; the permanent one was just making its appearance posterior to it. I removed it without any difficulty, as it was much absorbed, and I think there will not be much trouble in getting the permanent tooth to its proper position.

TIPTON, IOWA.

PROCEEDINGS OF DENTAL SOCIETIES.

PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

REPORTED BY GEO. T. BARKER, D.D.S.

A STATED meeting of the Association was held on the evening of October 2, 1860, at eight o'clock.

President Dr. Dillingham in the Chair. Present, Drs. Fouché, McQuillen, Buckingham, S. Roberts, Fitch, Kingsbury, Peirce, D. Roberts, Hopkins, and Barker.

The minutes of previous meetings were read and approved.

Reports from the Librarian, Treasurer, and Delegates to the American Dental Association were presented.

Drs. Buckingham and Peirce were appointed to audit the Treasurer's account.

Election of Officers being in order, the following were elected for the ensuing year.

President.—Dr. S. Dillingham.

Vice-President.—Dr. T. L. Buckingham.

Secretary.—Dr. Geo. T. Barker.

Treasurer.—Dr. J. F. Flagg.

Librarian.—Dr. C. P. Fitch.

Committee on Membership.—Drs. McQuillen, Kingsbury, and Peirce.

New business being in order, Dr. Barker gave notice that at the next stated meeting he would propose for adoption the following addition to the By-Laws: Article VI.—of Members—Sect. 2. That any one applying for membership must be a resident of the State of Pennsylvania.

He stated his object in advocating the above resolution was not to cut off any from this Association, but rather to encourage the formation of Associations in sections of the country where none at present exist.

On motion, a committee of two was appointed to expend the sum of fifty dollars, in the purchase of books, to be added to the Library of the Association.

The Chair appointed Drs. McQuillen and Barker to constitute that committee.

Dr. Kingsbury, in a few appropriate remarks, referred to the decease of our esteemed fellow-member, Prof. Chapin A. Harris, of Baltimore, and moved that a committee of three be appointed to draft appropriate resolutions expressive of our regard. Adopted.

The Chair appointed Drs. Kingsbury, McQuillen, and Fitch, who, at a subsequent period during the evening, reported the following resolutions, which were unanimously adopted:—

Whereas, The members of the Pennsylvania Association of Dental Surgeons have heard with profound emotion of the decease of Prof. Chapin A. Harris, of Baltimore, an Honorary Member of this Association, and one of the most eminent and distinguished practitioners of the dental profession, and in obedience to the dictates of our private feelings, we deem it appropriate to mark this occasion with an attempt to record our estimate of his pre-eminent abilities.

Resolved, That the services rendered by Prof. Harris, as a Teacher, Author, and Practitioner, demand prominent commemoration; that throughout nearly a quarter of a century he maintained a wide and various intercourse with the members of the dental profession, cherishing a constant and deep interest in their advancement, and by the soundness and comprehensiveness of his opinions, he exerted at all times a great and salutary influence upon the principles and practice of the profession.

Resolved, That it was the privilege of Prof. Harris to enter the dental profession when it was in its infancy; that he had brought to its cultivation great general ability, practical sagacity, logical power, and patient research; and that it was greatly through his influence, in conjunction with his compeers, that the growing wants of the profession were met and satisfied.

Resolved, That while his gentlemanly deportment and social virtues command our admiration, we regard his unblemished moral and Christian character as most worthy of our emulation.

Resolved, That we tender to his bereaved family in their deep affliction our heartfelt sympathies, and that a copy of these resolutions be forwarded to them, and also to the dental journals for publication.

C. A. Kingsbury.
J. H. McQuillen.
C. P. Fitch.

After an interesting discussion upon the objections and advantages of the osteoplastic material, the meeting adjourned.

A monthly meeting of the Association was held on the evening of October 9th, 1860, at eight o'clock.

Vice-President, Dr. T. L. Buckingham, in the Chair. Present, Drs. Fitch, Peirce, McQuillen, Garretson, McGrath, Githens, and Barker. The subject of discussion was stated to be

The Treatment of Palatine Fissures.

Dr. James E. Garretson offered an interesting paper on this subject, a synopsis of which we present:—

He said, in the treatment of palatine defects, the first and foremost consideration is of their cause and condition. Thus, palatine fissures, perforations, and deficiencies may, by influencing circumstances, require a treatment so modified or changed as to seem at variance with each other. For example, we may take two perforations exposing the nares, one congenital, the other the result of disease; now, in the first we may adopt, for the relief of the patient, any operation or appliance which may suggest itself, while in the second we may justly pause at any interference. No one in his senses would attempt the operation of staphylorraphy on a patient laboring under acute syphilis, or where mercurialization had so broken down the crasis of the blood as to make a union by the first intention impossible or even doubtful. He conceived there were no set rules, outside of those required in the mere manipulative performance of operations, that could be given for the treatment of palatine defects. It is in the consideration of such cases that a man learns to appreciate the value of principles, and changes in condition, which, instead of confounding, only serve to increase his interest. He walks in the leading-strings of pathology, and feels secure in the office he assumes; so, therefore, it may be safely premised that the dentist had better eschew the treatment of palatine defects, if his studies have been circumscribed by the alveolar processes.

As a matter that may serve to interest for a few moments, he would direct attention to some few of the surgical conditions met with in the hard and soft palate.

Cleft palate.—Under this head, surgeons comprise all fissures of the parts, whether they extend only the length of the uvula or pass forward to the lips. You all know what these fissures are; but he would direct attention to some points in the operation with which all might not be familiar. The operation should never be undertaken until the patient is in a proper condition; that is, the life or recuperative force must be such as to insure a sufficient amount of healthy inflammation to unite the pared edges which are to be brought into contact. It should never be undertaken until, by repeated titillations of the parts to be operated upon, the patient has become so accustomed to the irritation which the operation is calculated to provoke, that he will be enabled to submit without retching. The introduction into surgical practice of the metallic suture and the metal bead, of Mr. McLean, will necessarily simplify and insure a greater amount of success in velosynthesis. One great difficulty in the operation, as you are aware, consists in tying the ligatures nicely, and the want of success is in most cases to be attributed to the premature sloughing out of the silk threads employed for approximating the wound. Metallic sutures do not act as irritants, and will so remain in a wound an indefinite length of time. He recalled certain ligatures applied to varicose veins, by his friend Dr. Levis, one of the surgeons to the Philadelphia Hospital, where the only difficulty apparent was in this non-irritability of the silver wire employed in the ligature. Recalled one particularly, to which he had directed his attention, where the wire had been in the wound some five or six weeks; but it will be seen that this non-irritability is the very *sine qua non* in the sutures required in staphylorraphy; so, in the adoption of threads of silver, lead, or iron, this long-felt difficulty is overcome. The trouble of tying the ligature will hereafter be obviated by the employment of the McLean bead, made very small. The operation may be easily performed, as thus described: The patient is seated on such a chair as will afford rest to the head. (He knew of none so well adapted as the lounge-chair which many have seen in his office; the neck of the patient falls, as it were, over the angle of the back, while the cushioned top supports the head in perfect comfort.) The operator, standing on a foot-stool, takes his position at the back of his patient, and thus looking down and back in the throat, finds he has complete control of the parts. Operating in this position, he commences his incision at the velum pendulum palati, bringing it forward to the apex of the fissure. The advantage of this position (original, he believed, with himself) is, that you are out of the way of the expectorative efforts of the patient, the parts clear themselves very much from the slimy mucus and blood, and there is no obstruction to the light by the head of the operator. The extent of the paring can only be determined by the nature of the surface. A tenaculum is to be passed through the part to be incised for the purpose of tension, and a tenotome will be found very nicely adapted for the incisions. A great diversity of opinion exists as to the porte which is to hold the needle, the general preference, however, being given to the holder of Schwerdt. He would suggest, and did not believe any better instrument could be found than a pair of slightly curved finger forceps, with interdigital serrations running lengthwise with the blade. Schwerdt's porte has the handle, which works the spring, in a way, which, to him, seemed awkward; and the forceps of Dr. Physick are clumsy. If the wire used for the suture has not been too much annealed, it may be passed through the membrane or tissues without the needle, the point having been made very sharp; soft wire is, however, much to be preferred, and temper may be given to the point with the hammer instead of the file; tying is now unnecessary, in consequence of the improvements just alluded to. When the ligatures are all in situ, each separate pair of ends being twisted together and hanging from the mouth, the button (lead is preferable) is slipped over the wires which are to approximate the apexial ends of the fissure, and the incision is to be brought together by slipping the delicate button along until it rests on the mucous membrane. This last manipulation is accomplished by a second pair of finger forceps, broad and sharp at the point, having in each blade a hemispherical cut; holding the button with the same forceps to its place, it may be compressed on the wire with such forceps as the dentist employs in the extraction of inferior incisor teeth.

This approximation of the parts is not always so easily accomplished as would seem to be inferred from the description of the operation, and indeed it would be found that in seven cases out of ten this bringing together of the parts by force will compromise the success of the operation. The soft palate, it is to be remembered, is made up in great part of muscular structure, and any undue strain that may be made on the suture by these muscles is to be considered and remedied. There are five of these muscles on each side, but in the operation of staphylorraphy the surgeon finds his chief source of trouble in the tensor palati. These muscles underlie the superficial or levator palati, arising from the scaphoid fossa at the root of the internal pterygoid plate, from the anterior surface of the Eustachian tube, from the spinous process of the sphenoid bone; and turning over the hamular process of the pterygoid plate, it expands into a fan-like facia which is inserted chiefly into the soft palate. This muscle is most easily divided in its tendinous portion just in front of the hamular process. The incision should be made obliquely.

Mr. Ferguson, the English surgeon, in directing the perfect repose which should be enjoyed by the parts, recommends the division of the levator palati, the palato pharyngeus, and the palato glossal muscles.

The pared edges being nicely approximated, we can only leave the completion of the cure to nature; the only assistance we are able to render being an oversight of the inflammatory action and the employment of means for its modification, as may seem needed. Of course it would be suggested to any one that for the first few days, at least, the most perfect quiet must be preserved to the parts; the patient should not be allowed food that would require masticating; sneezing, coughing, and all similar expulsive efforts must, if possible, be prevented. He must not be allowed even to speak. If he were performing the operation in a case where failure had been previously met with, he should be inclined to feed his patient for the first two or three days with enemata of gruel, soups, etc.

The sutures may be taken away in from three days to two weeks. He thought the metallic suture might be left in full two weeks with benefit to the case, that is, provided no inflammatory action was developed.

Holes in the palate.—In this condition he believed he could suggest an improvement on the mode employed by Dieffenbach. This surgeon pencils the edges with the tincture of cantharides, depending on the granulations excited by the application for the obliteration of the opening. Now, while this answers very well for the small breaks in the palate, it seldom succeeds in large ones. The mode which he would suggest is as follows: take an impression of the mouth, and strike up a plate as for a simple obturator; this being fitted satisfactorily and retained by bands clasped about convenient teeth, let the orifice of the cavity be pared, and the parts touched lightly two or three times a day with tincture of iodine; the granulations which are so healthily yet profusely excited by this preparation are supported by the plate. In this way he considered a deficiency of an inch or more could be remedied. Of course the circling cicatrix is to be occasionally freshened by the knife-blade; but after the first paring the cuts may be from the circle in, and not around the cavity. He has at present under care a case where there is an opening in the hard palate, passing from the mouth to the nose, of at least an inch and a quarter in length; if possible, will persuade the patient to submit to this mode of cure, and shall take pleasure in reporting the result.

There is another class of deficiencies in the palate, where the opening is found with heavily indurated edges. One would scarcely like to form so large an opening as would result from the removal of such indurations. Dieffenbach recommends the wearing in these holes of a double piece of india-rubber. Two pieces of rubber, the thickness of pasteboard, are cut three or four times larger than the opening to be closed, and between these should be placed a small round piece; they should then be securely fastened together by means of waxed threads; one of these pieces is intended to rest on the posterior, and the other on the anterior surface of the opening, and the small, middle piece in the intermediate space.

A great improvement, however, on this mode of treatment, is a simple atmospheric plate, the cavity to be formed on any convenient surface of the palate; such a plate can be removed, cleansed, and replaced in a moment, without the slightest trouble and without the danger which lies in the rubber of enlarging the cavity.

Odontocele.—Operations for the removal of encysted teeth are not unfrequently causes of palatine defects. A cyst may refuse to obliterate itself, leaving an ugly and annoying irregularity in the arch. He has treated these cases most successfully by breaking up with the knife the boundaries of the cyst, and then stuffing them with lint saturated with a very weak solution of chloride of zinc. This zinc preparation must be employed with much judgment, and he considered that he had accomplished some strange and happy cures through its instrumentality; but has gained an experience with it at some risk, and would take the liberty of cautioning the members against its indiscriminate use. He would claim for chloride of zinc that, as well as possessing a cauterant property most decidedly marked, it exercises also peculiar alterative qualities; if you slough away a dying mass with it, the surface from which such mass detaches itself will be found in most cases to present the appearance of a simple healthy ulcer.

To return to odontocele: the cavity is to be obliterated by provoking granulations; tincture of iodine acts in such cases very happily, and may be used with the common amount of risk attending the treatment of such conditions. If in these cases too great stimulation is used, we have, as a result, fungus or degenerated granulations, or what is commonly called proud flesh; if this happen, we may simply shave off the excess, and employ astringent washes; if, however, such degeneration should continue, defying local treatment, we must look for the cause in the constitutional direction. Occasionally the irritation caused by the action of the food on the parts is such that the fungoid character continues, and the operator and patient may begin to think the case one of epithelioma. Such cases may be treated by removing the local irritation and giving the support to the granulations which have become necessary to their organization. Let a cast of such a mouth be made as for a non-atmospheric upper set of teeth; spread nicely over this cast, at the point representing the position of the ulcer, a thin coating of plaster or wax of the thickness of the common cerate-cloth. Make from this model the metal dies, and swedge up a plate. To hold the plate in position, bands must be adapted to convenient teeth. Here we have a means of supporting the granulations, the support being a medicated dressing placed in the shallow cavity prepared in the plate for its reception. If by this treatment we cannot cicatrize an ulcer, it might not be unreasonable to have a fear of some malignant condition.

He remarked that there were palatine defects sometimes presenting themselves, the result of accidents. A very common one was the fracture of the process containing the front teeth, usually the result of falls. The treatment of such cases he had always found interesting, although sometimes they were quite perplexing.

Dr. John McGrath said that about three months ago, two cases of defective palate came under the treatment of his father and himself, a short description of which he would offer. Both the patients were beyond the middle period of life. In one case the defect was of over twenty years' standing, but the other was of more recent date. In each case, however, the defect was the result of the same disease, (syphilis,) yet they differed widely in their appearance, extent, and location. The nature of these defects was such as to preclude all possibility of their being remedied by any operation, so that recourse was had to the only means left, viz., the construction of such obturators or artificial palates as would restore the impaired functions of mastication, deglutition, and speech.

The first case, as seen in *Fig.* 1, was that of a female over fifty years of age. In this instance the fissure was confined to the hard palate, and was undoubtedly the result of syphilis. Of the history of this case all that could be obtained was such as was derived from answers to indirect questions which were put to her. They learned that the defect was the result of a disease which commenced as sore-throat, and continued its ravages for over three years before it was arrested; this, together with the appearance of the pharynx and uvula—they being covered with cica-

Fig. 1.

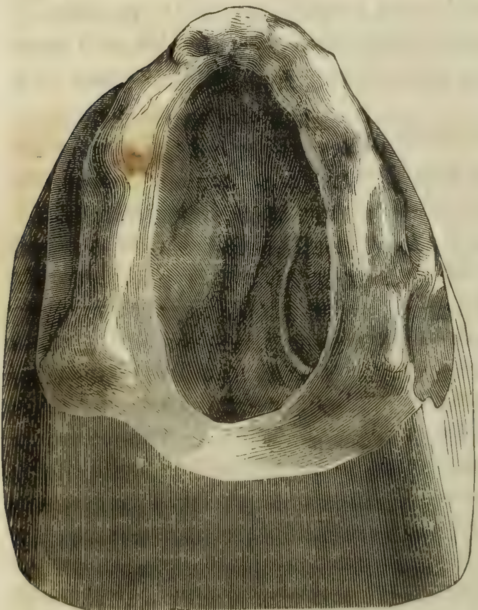
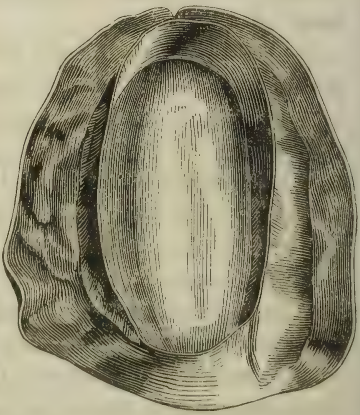


Fig. 2.



trixes, the results of old ulcers—left them without any doubt as to the true nature of the complaint. The parts which had been destroyed during the progress of the disease were the palate bones and the palatine processes of the superior maxillaries, (making an opening into the nose nearly two inches in length and one inch in breadth,) the turbinated bones (with the exception of the middle one on the left side, which is represented in the cut as projecting from the side of the cavity) and vomer, producing an enormous irregularly shaped cavity, extending as high up as the nasal bones, which latter, however, bore no traces of ever having been affected by the disease. The patient, in order to prevent the passage of the food into the cavity during mastication, had been in the habit of filling the opening with a fold of muslin, which answered to a certain extent for that purpose; the velum was entire; the patient had also lost all the teeth of the upper jaw.

The kind of obturator employed in this case was simple and uncomplicated in its mechanism, *Fig.* 2. A plate was made to fit accurately to the alveolar ridge, extending about the one-eighth of an inch beyond the posterior margin of the opening; also passing in to a distance of nearly an inch, and fitting as closely as possible to the anterior and lateral sides of the cavity. The object of this latter arrangement was to render the plate firm in its position. From the posterior margin of the opening, and extending forward about half the length of the alveolar ridge, was a fold of mucous membrane projecting inward and upward, over this fold; that portion of the plate which was opposite to it was bent. This, together with the suction obtained by the plate fitting closely to the alveolar ridge, enabled the wearer to keep it in its place. The opening was then covered, by soldering to this a second piece of plate, so fashioned as to represent as nearly as possible the form of the lost palate. The object in not extending the plate into the cavity on the posterior edge of the opening was to prevent a lodgment for the nasal secretions, which by their accumulation would prove offensive to the patient. The artificial teeth were then fastened in their proper position, and the apparatus was complete. This obturator the patient has been wearing for about three months; it remains in place and fulfills the office of mastication as well as any ordinary suction plate in a mouth where no defect of the palate exists.

The second case, *Fig.* 3, was also that of a female, but the fissure was confined to the soft palate. This, as in the former case, was the result of syphilis. The fissure extended from the posterior opening of the nares through the velum to the palate bones, and was nearly an inch in breadth. The uvula was entirely gone, as well as the lateral half-arches, and along with them the palato pharyngei and constrictors isthmi faucium muscles. In this case deglutition was impaired to a great extent, the food would pass into the nares, and the fluids would also pass into the nasal cavity and out through their anterior openings. The disease had not confined itself to the palate, but, extending to the nasal organs, had completely destroyed their internal structure, as well as a portion of the nasal bone, to such an extent as to materially change the external shape of that organ. The obturator, *Fig.* 4, constructed for this case, was of one piece, and made to cover the hard palate completely, extending from the central incisors to the posterior wall of the pharynx, and passing a short distance beyond the edges of the opening on each side. The plate was made to press firmly against that portion of the soft palate which remained, yet not so firm as to be the cause of irritation, the edges of the plate being slightly bent downward for the same reason; the object being to prevent the possibility of the soft parts being drawn above the palate, which would afford a communication with the nares. The posterior edge of the obturator was bent downward, at a right angle with the body of the plate, and curved so as to form with the posteror wall of the pharynx an oval opening sufficiently large to permit the patient to breathe freely through the nostrils. In the act of deglutition, the muscles would contract and press against this portion of the plate, thereby cutting off the communication with the nares. To this plate was attached three artificial teeth—two lateral incisors and one molar—the whole being retained in position by means of clasps around the teeth.

FIG. 3.

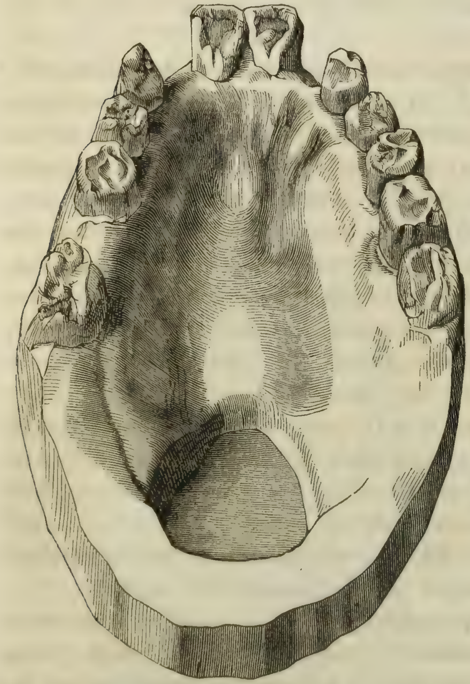
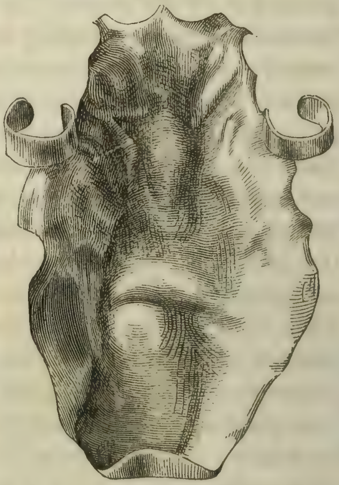


FIG. 4.



This obturator the patient has been wearing a little over two months, and, like the former one, has proved successful, deglutition being restored, and the speech considerably improved.

Dr. Buckingham remarked, he had treated several cases requiring obturators, or rather had made the mechanical appliances for them, never having treated one surgically. He thought it might possibly come within the province of the dental practitioner to perform the operation of staphylorraphy, but in a large city like Philadelphia there were persons who devoted their whole time to surgery alone, and as this was an important surgical operation, not only being difficult to perform, but requiring attention afterwards, at the patient's residence, it would scarcely allow a dentist who had a full practice to attend to it. He had, however, no objections to its performance by any dentist who was qualified, and wanted to perform the operation—for his part, he had been satisfied in trying to benefit those who came to him by making such mechanical appliances as the cases required.

Of the movable appendages which had been spoken of, that were designed to perform the duties of the velum and uvula, he considered they could be of very little use, and had never attempted to make them, as they required either the assistance of the tongue or the muscles against which they pressed to move them, and in either case the motions obtained would be very imperfect.

The first case he had anything to do with was that of a gentleman who had an opening through the hard palate, in the centre of the arch, about as large as a ten-cent piece. This gentleman had worn an obturator with a sponge attached to it, made in the following manner: a plate was struck up to fit the roof of the mouth, and a piece of sponge was sewed upon the palatine surface to fill the opening, and to hold the plate in its place. Some of the objections to this obturator were, that the opening became enlarged from the absorption occasioned by the pressure of the sponge upon the sides of the cavity; it would also become very offensive, and required frequent removal. In this case a plate was struck up to fit the mouth, and attached to the teeth by means of clasps. This simple appliance answered better than any other that had been made for him.

Case 2 was a gentleman who had an opening into the left antrum, at the point where the second bicuspid and the first molar had been, but on the outer surface of the alveolar ridge, or rather where the ridge had been—for the alveolus was entirely absorbed opposite the opening, which was about half an inch in length by a quarter in width. The antrum and nasal bones were diseased, which caused an almost intolerable odor.

He made, for this case, a small obturator to close the opening. This was left open at the top to allow him to place in it a small portion of chloride of lime. His intention was to correct, if possible, the offensive smell, but the patient did not live long enough to give it a fair trial; he remarked that while any of the chloride of lime remained in the obturator there was no unpleasant smell, but unfortunately for the experiment, the gentleman had lost nearly all the sense of smell, and, therefore, could not tell when it had evaporated.

He made for this case an upper set of teeth, to which the obturator was secured, it being held in position, to a great degree, by the plate and teeth.

In the two preceding cases the voice was not altered when the appliances were in the mouth.

Case 3 was a gentleman who, on a previous occasion, had a tumor removed which covered a portion of the posterior surface of the hard, and the anterior surface of the soft palate. The surgeon, on its removal, had divided the velum and uvula, so that the case resembled a congenital deformity. The attempt had been made twice to bring the soft parts together again by a surgical operation, which had failed.

Fig. 5.

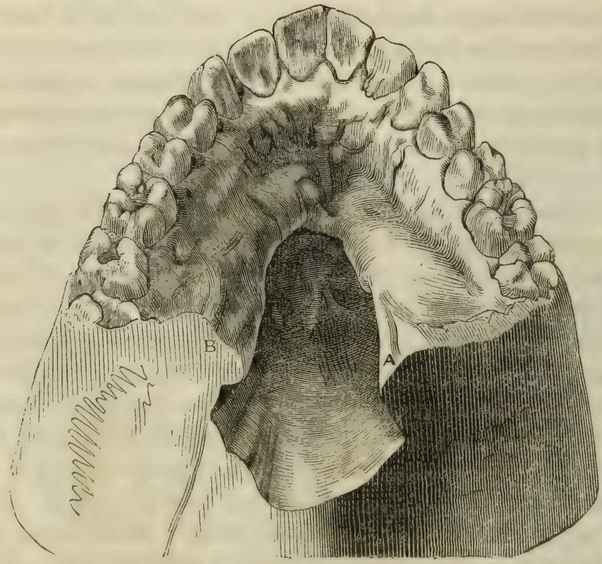
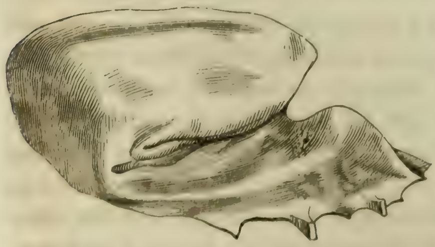


Fig. 5 shows the appearance of the parts very clearly—the letters *a* and *b* showing the thickened muscles as they hung down on the sides of the pharynx.

Fig. 6.

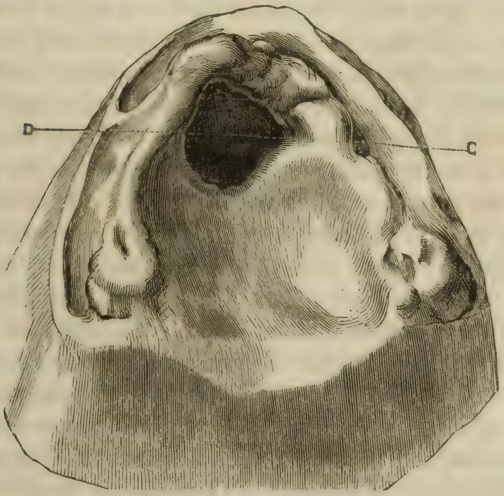


He made for this case an obturator, (*Fig.* 6,) the plate of which covered the whole of the roof of the mouth, with a bulb attached, to extend up into the posterior nares and well back toward the antero-posterior walls of the pharynx, leaving but a small space between them. This obturator enabled the gentleman to eat and drink without annoyance; without it, food would pass into the nares and occasion much inconvenience. It also greatly assisted his voice, as many of his words could not be understood when it was not worn, but he could articulate them with great distinctness when it was in place; remarked that he had been more successful in restoring the voice in this case than in any other he had treated, and attributed it to the fact that this person, having once had his voice perfect, was always endeavoring to speak as he had formerly done, while in the congenital cases, they did not try to overcome this difficulty.

Case 4 was that of a lady who had an opening in the anterior part of the hard palate, a little larger than a ten-cent piece, and also a small one exposing the left antrum. All the teeth in the superior arch had been removed, and absorption of the alveolar process, opposite the smaller opening, had progressed to such an extent as to present at that point a deep depression; the remaining part of the alveolar ridge had not been absorbed more than is usual where the teeth have been lost.

Fig. 7 shows the appearance of the different parts, *c* representing the smaller opening, and *d* the larger one; between these two points was the depression referred to.

FIG. 7.



This lady had never worn any mechanical appliance, but had been in the habit of closing the larger opening with loose cotton or pieces of linen. Without having it filled, she could scarcely be understood when speaking. He made for this case, first, a plain plate to extend over both the openings, but not into them; upon this plate, at the point where the process had been absorbed, he arranged wax so as to restore the alveolar ridge to its natural fullness. By using the plate with the wax attached for a mould, he was able to obtain metallic dies. A second plate was then made to fit over that part of the first one which was covered by the wax—

these two plates were then soldered together. The object in forming a double plate was to fill up that part where absorption had taken place, so that the plate when worn would resemble the roof of the mouth, and not be deeper on one side than on the other.

This obturator was very successful, the voice was much improved, and she could eat and drink as well as persons ordinarily can who wear upper sets of teeth; and, what was more remarkable, she could wear it without springs or any assistance whatever to retain it in position.

Case 5.—He stated that he hardly knew whether this case should come under discussion at the present time or not, as it could hardly be termed a palatine fissure, but, from its exceeding interest, would now present it.

A gentleman was handling a gun loaded with buck-shot, when it was discharged in his hands. The gun being pointed toward his head at the time, the load struck him at the angle made by the ramus and the inferior maxillary on the right side, passing upward and outward on the opposite side of the face. It must have been a terrible wound, and should, from the representation given, have caused almost instant death. He however recovered after being confined to his bed for more than a year, and during that time he had to be fed with a spoon. The only way he could eat or drink was to lie on his back and let the food run down his throat, and it was a long time before he found he could swallow.

The teeth in the upper jaw were all gone excepting the left second molar and wisdom tooth; both of the antrums were fully exposed, the remaining roof of the mouth being left almost flat. The lower jaw-bone was gone on the right side from the second bicuspid back, and also the condyloid process; but about three-quarters of an inch of the coronoid remained, which was drawn in so as to partially cover the roof of the mouth. The molar teeth were lost on the left side, and also all on the right side from the symphysis. In taking hold of the lower jaw it could be moved either backward, forward, or laterally, to a considerable distance.

Figs. 8 and 9 show this case—the letters *a* and *b* the openings into the antrum, and *c* the end of the lower jaw-bone. The distance between the points *a* and *c*, when the mouth was closed, was just two inches.

This gentleman had been wearing a partial set of upper teeth which had been attached to the molars, but the clasps of the artificial teeth had loosened them, and it was therefore necessary to replace this piece of work with a set that could be supported in some other way.

This was the most difficult case he had ever treated. One of the greatest obstacles he encountered was the obtaining of a correct impression. To accomplish this, he first filled the antrums with loose cotton to prevent the wax from passing into them; he then took as good a wax impression as he could of both the upper and lower jaws; from these he made impression cups to be used in taking the plaster impressions. There was very little difficulty in obtaining an impression of the upper jaw with plaster, (the antrums being filled with cotton as before,) but it was far more difficult to take a good one of the lower jaw. The distance from the points of the teeth down to the point marked *c*, as shown in *Fig.* 8, was so great that when any material was pressed down to take the impression, it was almost impossible to remove it from the mouth without altering it so much as to render it of no value; after several trials he succeeded in getting a very good one with plaster. It had to be broken before its removal from the mouth, but by carefully putting the pieces together, a good plaster cast was obtained.

Fig. 8.

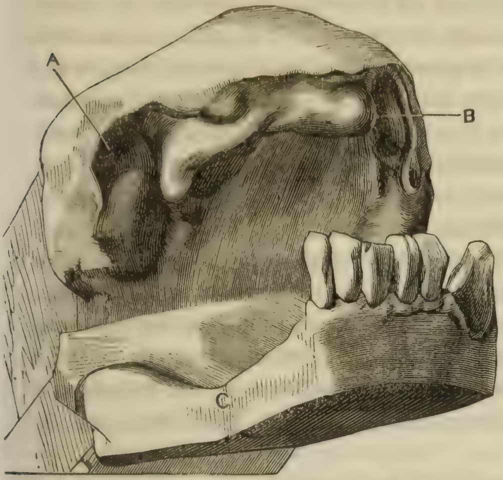
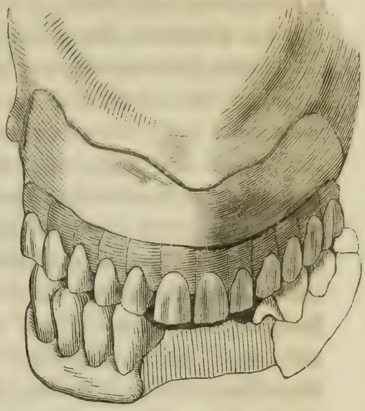


Fig. 9.



He then made a plate to extend over the roof of the mouth and cover both of the cavities opening into the antrums; on this plate he arranged wax, bringing it down as far as the alveolar ridge should have been; then made a metal cast and struck another plate to fit over the first, soldered them together, and placed upon these single gum teeth as he would have done had there been no more absorption than is usually found in upper cases.

There was nothing peculiar in the formation of the lower case, except that the teeth had to be very long on the right side, (for this a block was made,) and the plate was not allowed to extend farther back than to the position once occupied by the second bicuspid tooth. The under teeth were put in more for the purpose of attaching springs for the support of the upper ones than for use.

He could not say what success had attended this case, as the gentleman left the city immediately upon their insertion, and he had not seen him since that time.

Dr. McQuillen stated that he had no experience to offer with regard to the treatment of palatine fissures or the construction of obturators. He recalled, however, a case that came under his notice, in which a patient, with an opening through the palate, the result of tertiary syphilis, was treated by Dr. Neall, who employed in the first instance india-rubber as a substance from which to construct an obturator. This was cut somewhat in a button shape, being large above and below, and contracted in the centre, thus constituting an apparatus which was retained in position by resting on the floor of the nares surrounding the orifice. After it had been worn about a week or two, the patient returned, when it was found quite loose and the orifice somewhat enlarged, the rubber having been a source of irritation and induced some absorption. Another apparatus was formed from the same material, and after being worn for a week or so, the orifice was found much larger than at the previous meeting. The rubber was also found considerably affected by the fluids of the mouth. Satisfied that it would not answer the purpose intended, this material was abandoned, and a plain silver plate was then constructed, covering the orifice and roof of the mouth, with bands fitted to the molars and bicuspids, but only resting on their palatine surfaces. This was found to answer every indication.

Dr. Buckingham described the method adopted for taking impressions of palatine fissures, in cases requiring obturators. He first took an impression of the mouth either with wax or plaster, as the case permitted; or sometimes, when his cup was not just the shape it should be, first took an impression with wax, and, putting some soft plaster upon it, placed it again in the mouth, and thus obtained a plaster impression. In these first impressions he did not allow the wax or plaster to extend into the cavity but a short distance. After the plaster cast from this impression had been made, the cavity in it should be filled up with wax, so as to give it the shape it would have been had there been no cavity in the mouth. From this cast, thus prepared, he made the metal casts and plate. This plate should be fitted perfectly to the mouth, and in some cases, allowed to extend back to the pharynx.

On this plate he would build wax as near the shape of the cavity as he could tell by looking at it, and then would place it in the mouth; if the wax rubbed against the side of the cavity, (which could be told by the appearance of it when taken out,) he removed a portion of it; by holding this wax over the flame of a spirt-lamp, the surface would become soft, so that it would show where it rubbed very plainly; in this way he could get a tolerably good impression of the parts. If, however, a perfectly correct one was desired, he would place soft plaster upon the wax, building as much on the top as possible; when this was put in the mouth and pressed up into its place, the plaster would settle down on the sides so as to take an impression of the parts where the cavity was larger above. In removing it from the mouth, the plate would generally come away first, leaving the wax with the plaster upon it; this could easily be removed by pushing it back toward the pharynx, and then drawing it out. If some of the plaster scaled off, the pieces could be retained and placed in position. The wax with plaster on it could be put on the plate, and thus a correct impression of all the parts would be obtained.

To make a plaster cast, he would run out one side first, and when it had set, would trim and oil the surface where the other was to join it, and then run the opposite side. The cast when made was divided longitudinally, and on each half he made a part of the bulb. The two parts were then soldered together, forming the entire bulb, which was then to be struck up on the original plate. They should then be cemented together and tried in the mouth, and if found to be correct, they were then to be soldered together. He said it was not the easiest thing in the formation of obturators to make one of these bulbs perfectly air tight, and unless some precautions were taken in soldering, it would be found almost impossible. When the metal was heated sufficiently to flow the solder, the air in the bulb would be rarefied, and as the temperature was lessened, the air would rush in before the solder had set. The plan he adopted was to make a small hole with a plate punch in some prominent part of the bulb, and after the other parts have been soldered, to solder this hole up. In order to try whether the bulb was air tight or not, it was only necessary to heat the case tolerably hot and throw it into cold water; if there was an opening, the air in the bulb would be rarefied by the heating, and be condensed when cooled in the water, which would be forced in to fill up the vacuum. Then, if it was again gently heated, the water in the bulb would be converted into steam, which could be seen as it passed out of the opening.

He knew a gentleman who made a double plate to mount a set of teeth on, and had not taken this precaution to try whether it was air tight, but arranged the teeth and invested them in plaster to solder; when he put the case in his furnace to be heated, his plate blew up like a boiler, scattering the teeth in every direction, completely spoiling all his work.

He remarked that usually he made his obturators of metal, either gold or silver, but now thought hard rubber would be much better, as they could be made solid, which would allow the operator to cut or file them as much as they required; this could not be done in many cases with the metal ones; when made of this substance they would also be very light, which would be of great advantage.

Dr. Barker remarked that he thought in place of the wax and plaster used by Dr. Buckingham for obtaining impressions of fissures, that gutta-percha would be a good substitute; this was, however, mere theory, as he had no experience to offer in the treatment of the subject under consideration.

Drs. McQuillen, Fitch, and Garretson spoke of their objections to the use of hard rubber in such cases.

At the close of the discussion, Dr. James E. Garretson presented to notice an improved cup (the invention of his father) for obtaining wax impressions.

Dr. Barker also exhibited a small model of a platform designed for the support of a dental chair. He said it should be of about six inches in height, and upon this a chair and foot-rest were to be securely fastened; the base not being quite as large as the platform, and between these a ball-and-socket joint should be placed. To the platform a three-inch strip of wood was to be fastened between it and the base, and both should be carpeted, also having a three-inch fringe to conceal the intermediate space; this would allow a movement of three inches to the platform, which he thought would be sufficient for any position of the chair that was desired by the operator. The ball was to be securely locked by means of a cam on the right side, that would allow the dentist to move his chair without a change of position while operating; it should not extend, however, beyond the platform. He claimed for this invention the following advantages: It gave all the motions which were obtainable with any of the patent ball-and-socket chairs; it could be sold without a chair, at a moderate cost, so that any one could use it without the necessity of purchasing a new one. That while it was simple, and he believed effective, it retained the beauty of the chair without giving patients any view of machinery so objectionable to many. He remarked, it might possibly be said that this was an infringement upon the patents of one or the other of the "Ball-and-socket Chairs;" of this, however, he was unable to judge, but would present it to the profession and allow them to determine its merits.

On motion, it was unanimously

Resolved, That the thanks of the Association be tendered to Dr. Geo. T. Barker, for the liberality evinced by him in presenting his valuable invention to the profession.

The subject of

DENTAL NECROSIS

was chosen for next discussion.

◆

THE HARRIS TESTIMONIAL FUND.

AT a meeting of dentists in the City of New York, October 8th, 1860, Dr. Eleazar Parmly was called to the chair, and Dr. Solyman Brown was made secretary; whereupon the chairman opened the meeting with the following remarks:—

Gentlemen of the dental profession, I am glad to see so large a number brought together upon this occasion, and permit me, first, to thank you for the honor you have done me, and for your friendly consideration in selecting me to preside at this meeting. There is, perhaps, no one present who has had the same opportunity of knowing the deceased that I have had. My long acquaintance with Dr. Harris, in the societies to which we belonged, and my more intimate acquaintance with him in the Baltimore College of Dental Surgery, while I held the office of Provost in that institution, enable me to say, with truth, that I have never known a man of more generous impulses, or more genial feelings, than he whose death has awakened our sympathies, and brought so many of his professional brethren together to express their high respect for his professional character, their admiration of his attainments, and their esteem for his moral, social, and personal worth.

As one to whom he was long known and endeared by the many virtues that adorned his character, I trust it will not be deemed unbecoming in me to give this testimony concerning one who has labored more arduously as a practitioner, more untiringly as a writer, and more devotedly as a teacher of the principles and practice of dental surgery than any person who had, in any way, or in any country, ever been connected with our professional art.

In his domestic relations, Dr. Harris was exceedingly happy. His home was one of the most hospitable and delightful that I have ever known. His house and his heart were always open to all those who approached him with the remotest claim upon his benevolence and bounty, with a widely-extended philanthropy.

The following PREAMBLE and RESOLUTIONS, reported by a committee of three, appointed for that purpose, viz., Drs. S. Brown, J. G. Ambler, and J. H. Foster, after discussion and amendment, were adopted:—

Every distinct profession in human society has its leading members—men of energy, talent, and eminence. This is as true of the dental profession as of any other, and not less true in America than in other quarters of the globe. The names of Greenwood, Wooffendale, Gardette, Hayden, Flagg, Hudson, Kœcker, and Randall, among others that have left their sublunary labors, are evidences of this fact.

It has become our melancholy duty, in pursuance of the objects of this meeting, to add another name to this catalogue, more highly distinguished than any of his predecessors for numerous and valuable contributions to the science and literature of his profession, as well by his writings as by personal inculcations as the head of the oldest, and, for many years, the only dental college in the world.

CHAPIN A. HARRIS has gone to his rest. On Sunday, the last day of last month, he fell asleep to awake in an endless Sabbath. His family, his profession, and his country are left to mourn his loss.

We, therefore, offer to this meeting, composed of some of his professional brethren, the following resolutions:—

1. *Resolved*, That in the death of DR. C. A. HARRIS, removed from his earthly labors in the prime of manhood, from his family in the fervor of affection, and from his country in the ardor of his usefulness, we recognize a sad bereavement, which the members of the dental profession, in all civilized lands, have just occasion to deplore.

2. *Resolved,* That the labors of Dr. Harris in assisting to establish the American Journal of Dental Science, the American Society of Dental Surgeons, and the Baltimore College of Dental Surgery, as well as in the construction and publication of his Dictionary of Medicine and Dentistry, and his Principles and Practice of Dental Surgery, have conferred favors on the profession which gratitude can never repay; because these, and other labors in the same direction, have broken his health, abridged his life, and gathered his friends and his family around his early grave.

3. *Resolved,* That a committee of three be appointed by this meeting to convey to the family of the departed the sympathy of its members on the occasion of their great and irreparable loss.

4. *Resolved,* That in view of the great and important services which the self-denying labors of Dr. Harris have rendered to the dental profession, a suitable testimonial be presented to the family of the deceased, by such members of the profession as may choose to contribute to that object.

5. *Resolved,* That a committee of three be appointed by this meeting to invite all dentists to unite with us in subscribing to raise a MONEY TESTIMONIAL, to be presented to the widow of Dr. Harris, and that this committee have power to appoint sub-committees in Europe and America to carry out the above object.

6. *Resolved,* That the said committee be instructed to give ample notice of the purpose above explained, not only in all the dental journals, but also by means of a printed circular forwarded by mail to all the dentists in the United States, appointing the time for the presentation of said testimonial to the family, and determining the manner in which the fund shall be appropriated to its object.

7. *Resolved,* That the committee hereby authorized to receive and appropriate the contributions made for the benefit of the "HARRIS TESTIMONIAL FUND," shall be instructed to use no part of said fund for any expenses excepting for printing and mailing the circulars and letters sent to the members of the profession, editors of periodicals, and members of the Harris family.

8. *Resolved,* That this meeting hereby requests all editors of dental periodicals to publish the doings of this meeting, together with the committee's circular, *free of charge.*

Committee on Resolutions.—Solyman Brown, J. G. Ambler, J. H. Foster.

Executive Committee.—Eleazar Parmly, Solyman Brown, E. S. Dunning.

Committee on Condolence.—Eleazar Parmly, Solyman Brown, J. H. Foster.

LETTER OF CONDOLENCE BY THE COMMITTEE.

NEW YORK, October 12th, 1860.

TO MRS. HARRIS AND FAMILY.

Dear Madam:—At a meeting of the dental profession convened in this city, on the evening of October eighth, we were appointed a committee to express, in their behalf, the deep sympathy entertained for you in the painful bereavement you have just experienced.

It seems most appropriate that those who have been longest associated with the deceased, as intimate professional acquaintances and friends, should have been selected to perform this sad and solemn office; yet, how can words adequately convey the expression of deep and heartfelt sorrow at the loss of one so universally mourned, or impart consolation to your afflicted and stricken hearts?

We should hardly dare intrude, even in our thoughts, on the sacredness of the bereaved home, did we not realize from our own experience, that no dark page of life's history is so dear to memory as that in which the sorrowful heart has been solaced, and its burdens shared by others; when the bereaved feelings have been turned from their sadness, and the tears of anguish have been dried by the hand of sympathy and love.

There are circumstances which give this event prominence, even among the severest afflictions with which it is the plan of God's providence to try us in this world.

We have no right to use the language of private and exclusive sorrow. Dr. Chapin A. Harris belonged to the public, to whom he has given the proofs of rare and unequaled eminence in his literary labors, and endeared to him troops of friends by his disinterested, devoted, and enthusiastic zeal.

His uncommon attainments and his ardent devotion to dental science had given his name a world-wide reputation, and his own works are a more lasting monument to his memory than sculptured urn or marble mausoleum. His is one of the noblest names that Fame has inscribed upon her rolls—"one of the few, the immortal names that were not born to die."

He does not need our inadequate eulogy. In losing him we feel that indeed a bright and shining light has gone out from among us. We, who had promised ourselves many years to rejoice in his friendship, have this to console and cheer us, that "*it is well with him.*" God forbid that we should distrust His infinite love!

But, alas! what sorrow is like their sorrow who mourn for such a husband and father? and how weak is human endeavor to lighten the shadow of the dark valley which seems to have settled down over their worldly prospects!

Accept, dear madam, from each of us our deep sympathy for yourself and family, in this severe trial to which you have been called, and renewed assurances of the sincere commiseration and sympathy of our professional brethren in this city. Trusting that in leaning upon Him who has said, "I will be the widow's God, and a Father to the fatherless," you may find your surest consolation, we remain, truly and respectfully yours,

ELEAZAR PARMLY,
SOLYMAN BROWN,
J. H. FOSTER, M.D.

EDITORIAL.

TAFT'S OPERATIVE DENTISTRY.

Caries of the teeth.—This article has some good points in it and is better written than some others which we have referred to; but there are some portions of a theoretical character which we would review and take exceptions to, but it would lengthen our articles too much, as indeed they are much longer now than we intended them to be at the outset. We might refer to one remark which needs correction, if the author means what he says. It is as follows: "Caries makes its first attack upon the dentine, and progresses most rapidly in the direction of the tubuli." We have always thought that it commenced first upon the enamel. Under the head of *causes of caries*, a great deal that is good is referred to, but, as the author remarks, "it is not here proposed to enter upon an investigation of the manner in which these various agents operate, for that would open up a vast field for exploration;" so with us, if we were to follow the author, would enter a vast field that would be a waste of time and paper. But for the vast amount of repetition in the article, it might have been much shortened.

The articles *Comparative liability to decay*, and *Consequence of caries*, are very good.

Treatment of caries.—Under this head "*constitutional*" treatment is referred to, but no inkling, under any circumstances, is given as to what it should be in any special form of caries, so that a key to the general treatment might be approximated, except to adopt that course of treatment as will bring about "a healthy state of the mouth in all its parts." Now, the author must consider this "news" to the student in dentistry. Reference is made to topical treatment, which is very good.

General remarks on filling. — Under this head some remarks are made which we cannot comprehend; for instance, "if it is true that decay of the teeth ever originated in constitutional causes, then the treatment should be constitutional, and not local." The repetition in those last few articles referred to are so great, that it is difficult to understand what the author desires to explain.

Under the head of *Materials for filling*, there is a great deal said that is good, and objections to each substance made in turn; but we are told three times in this article that gold is very objectionable, yet the author gives it a greater number of desirable properties for filling than any other substance. There is one remark of the author's which we wish here to correct, with regard to gold-foil as it was formerly used, although we use Watt's *crystal foil* to great advantage and would not do without it, but the sponge gold, or crystal gold, as it is sometimes called, we have long since abandoned as useless. He says: "Formerly, an ordinary gold plug, when removed from the cavity, would be separated into as many pieces as originally composed it; but now, when adhesive gold is skillfully used, the mass composing a filling cannot be divided into its original parts, but may be wrought into plate, wire, or foil." We removed a gold plug, which had been put in by a neighboring dentist, for inflammation of the pulp, sent it into the laboratory to be annealed and rolled; it was returned to us in plate which would bend and polish without breaking; we did not try to draw it into wire. We removed another which had been placed in a bicuspid tooth twenty-four years ago, by the late E. Townsend; we sent it also into the laboratory, and it was returned to us in as firm a piece of plate as we ever saw. A plug was placed in by one of our assistants; the tooth was broken by accident in a few weeks, and the plug came out; this was also rolled into plate, and is as solid as if it had been melted before it was rolled. It depends more upon the kind of instruments used in plugging than the kind of gold used; but we believe a plug capable of being rolled can be made with less labor, when kept dry, with the crystal gold-foil, than the ordinary foil. But it is erroneous "teachings" to advocate the opposite; it throws a distrust over the operations of those who do not use adhesive or crystal foil. Ordinary foil plugs, made where they cannot be kept perfectly dry, are better than adhesive foil plugs under the same circumstances.

Instruments for filling.—This article is very good. It shows that every operator should be able to judge for himself whether his instruments are of a proper kind and temper, and this he cannot do unless he is capable of making his points and temper himself.

We might here state that we seldom use a "Burr drill," as they produce too much strain on the tooth and excite pain, and are too slow in their action; we use small chisels. We may also add here, that as a substitute for plaster of Paris for supporting loose teeth in filling of their ends or separating, we bind a number of teeth together with ligatures of strong thread, going in and out between a number of teeth in the form of a figure 8 until they are all firm.

J. D. W.

(To be continued.)

FANG FILLING.

A VERY interesting specimen was recently presented to us by Dr. Geo. McMurtrie, illustrating how necessary it is in filling the fangs of teeth that have not completed their growth, to be careful that the gold is not forced through the foramen at the apex of the fang, and thus become a constant source of irritation to the periosteum, inducing inflammation and subsequent alveolar abscess.

The specimen presented is a right upper lateral incisor, the pulp of which became exposed about nine years ago, when the person from whom the tooth was extracted was quite a small boy. After treating and removing the pulp, the operator, one of the most eminent and careful in the profession, filled the fang with gold-foil; in doing this, the gold was carried so far through the foramen, that it projects in the specimen full an eighth of an inch beyond the apex. The filling in the tooth is in an excellent state of preservation, but the portion projecting through the foramen was, as might be readily supposed, a constant source of irritation after the operation was performed; and a fistulous discharge, from an abscess which was found adhering to the tooth when extracted, existed during the greater part of the intervening period.

On the same day that this valuable specimen was received, we had under treatment a right upper wisdom tooth, in which, after removing the pulp, a probe of some size was found to pass readily through the foramen at the apices of the coalesced roots. The experience of most operators no doubt will confirm the observation, that the foramen of the wisdom teeth of persons between eighteen and twenty-five years of age are quite large, and that this state of things is the principal cause of failure in operating upon them after the removal of the pulp. In the case under consideration, the length of the fangs was first determined, and then, in introducing the filling, care was exercised to prevent the gold from being carried through the foramen. It must be a self-evident fact that it is a matter of vital importance preparatory to attempting to fill the fangs of teeth where the foramen are large, to determine the exact length of the roots; in accomplishing this object, Dr. Maynard employs a very delicate probe with a hooked extremity, made from a watch-spring, and marked at regular intervals upon the sides. On passing this along the pulp cavity, if it passes out through the foramen, a sensation similar to that experienced when the gum is pricked by instruments, will be felt, and on attempting to draw the probe back, in place of coming away easily, the hooked extremity will be most likely to catch on the edge of the foramen. As Dr. M. suggests, if, on rotating the probe, it is found to catch all around, there can be no question that it is arrested by the edge of the foramen; but if it catches on one side only, it is most likely due to some prominence or depression on the side of the pulp cavity. Having determined beyond a question of doubt that the probe has caught on the edge of the foramen, by means of the marks on the sides of the probe the exact length of the fang can be ascertained. As the roots of different teeth, and of the same class of teeth in different persons, vary very much in length, an instrument such as this will be found quite useful, and enable the operator to know exactly how far the gold should be carried to reach the end of the fang.

J. H. M'Q.

SPONGE FOR ABSORBING SALIVA.

At the suggestion of a friend, who obtained the idea from Dr. Wadsworth, we have recently tried pieces of sponge for the purpose of absorbing the saliva secreted during the operation of filling, and have found them quite useful in cases where the secretion is clear and limpid; but when of a viscid character and very much loaded with mucus, they have not answered the purpose so well. As there is nothing that annoys the operator more than the excessive flow of saliva, every means that is calculated to overcome the inconvenience attendant upon its presence, such as small napkins, pieces of muslin, etc., should be at hand, ready for use when required; and this article, which is certainly worth a trial, may very properly be added to those referred to.

A neat manner of employing the sponge is to cut it into strips, about two or three inches in length and about an inch in width, and then envelop them in pieces of muslin, preparatory to use. J. H. M'Q.

TO CORRESPONDENTS.

We have received an elaborate communication from A. McElroy of Sixth Avenue, New York, respecting a question of dental ethics. It is upon the business relations between the surgeon and mechanical dentist. It seems that a controversy has arisen between two representatives of these departments in consequence of some mechanical work not having been executed according to expectation and promise, which failure has been attended with much pecuniary loss and personal annoyance, as well as professional discredit to the former. Without pretending to decide the rights of the particular case presented, we can only offer some general reflections upon the subject which gave rise to the dispute. In relation, therefore, to such cases, it would seem but common justice in the event of a failure to perform a duty undertaken with the promise of success, that the contracting party should so far as possible return an equivalent for the loss incurred, so far, at least, as the pecuniary injury inflicted, except in the event of unavoidable accidents. This rule, of course, will only hold good where positive promises are made to execute work according to order. Where the work is of such a nature as to render success uncertain, both parties must be responsible for the contingencies, each one according to the degree of responsibility. Hence where the difficulties are, for the time being, insurmountable, or unavoidable accidents arise, each one should submit to his share of the loss incurred. The relative degree of injury in professional discredit, loss of patronage, etc., will, however, always fall more heavily upon the surgeon than the mechanical dentist, inasmuch as the former is exposed to the harsh criticism of those who are wholly unacquainted with the inherent difficulties of the case, and who only measure merit by the degree of success, whereas the latter is judged by those having a full knowledge of the difficulties to be overcome in attaining that success, and hence the position of the latter, in this respect at least, is better than the former, both pecuniarily and professionally.

In view of the fact that the surgical and mechanical departments of dentistry are becoming so distinct, it is desirable that some general rules should be adopted in order to prevent misunderstanding and insure greater harmony between the members of the different sections of the profession. Hence, a code of dental ethics to settle the relations of the several departments and determine the various questions of professional jurisprudence should be formed. For the present and until such a system is adopted, the most promising plan is for the different operators to have a distinct understanding with each other respecting the work to be executed, and an agreement, in case of difficulty, to submit to arbitration rather than resort to the expense, uncertainty, and often injustice of the law as now administered. *

REVIEW OF DENTAL LITERATURE AND ART.

BY J. H. M'QUILLEN, D.D.S.

THE VULCANITE—AUGUST.

"PALATINE FISSURE; ITS REMEDY BY ARTIFICIAL MEANS CONSIDERED. By CHARLES W. STEARNS, M.D. * * * The conditions required to be fulfilled in any successful attempt to construct an artificial palate, or 'obturator,' as it has been more briefly named, are a nearly perfect adaptation to the irregular shape of the opening, and a combination of the properties of elasticity and durability in the material of which the instrument is constructed. The vulcanized '*soft rubber*' possesses these in a remarkable degree, and which, added to its highly plastic quality, leaves hardly any better material for the purpose to be desired. In fact, the vulcanized 'soft rubber' may, with some propriety, be termed, in this connection, *artificial flesh*, and the vulcanized 'hard rubber,' now much used by dentists, may, with even greater reason, be called *artificial bone*. The properties of the vulcanized soft rubber, in respect to durability, are quite remarkable when we reflect that, placed in the mouth, it is there subjected to the combined action of *five* destructive agents, viz.: animal heat, moisture, motion, the salivary acids, and the oils of the food,—all acting together and incessantly upon it. When this is moulded to the shape required, and, with a high degree of elasticity, it is yet flexible and soft as the finest kid, we may say that we are supplied with just the right material; and it only remains for us to make a good use of it. The *degree* of elasticity is a point that must be carefully attended to in manipulating the rubber, for, if the velum is made too hard and stiff, it will cause pain, and otherwise embarrass the action of the soft muscular parts with which it is in contact. If, on the other hand, it is too soft and yielding, it will not react or expand quickly enough, but will be liable to be clogged by food and the viscid fluids of the mouths; nor will it long sustain, as it must do, not only the ordinary pressure upon it in speaking and swallowing, but also the more violent and spasmodic efforts of coughing, sneezing, vomiting, etc.

"I will now proceed to explain, as clearly as I am able to do in words, the plans and methods I have used in adapting artificial vela to relieve the different forms of palatine fissure already described; and trust, by the aid of the accompanying drawings, to make myself understood by those who may happen to be especially interested in the subject.

"All cases require, in the first place, a plate or roof of gold, or some other convenient substance, to be prepared, to the posterior margin of which the flexible and elastic velum is to be attached. Where the fissure does not extend into the bony roof, as in cases belonging to the first class, a narrow arch of gold plate from the molar teeth on one side to those on the other, will be sufficient for our purpose. But when, as in cases of the second class, the opening reaches far forward, then an artificial roof has also to be supplied; and plates made of gold are found too heavy; but the vulcanized hard rubber, by its combined lightness and strenth, is much to be preferred. The plate or artificial roof having been properly fitted to the bony surface, the making of the velum is next to be proceeded with.

"As the velum is to be fitted to the fleshy, and therefore mobile region of the fissure, its shape and size must be determined by a resort to some expedients other than what are used to get a cast of the bony portions; for it is manifest that however soft and plastic the wax or other substance might be, the sensitiveness of the fleshy parts would cause them to retract instantly from contact with a foreign substance; so that the form of the fissure must, for the moment, be changed to something different from what it is while in a state of rest. Added to this, the degree of pressure, however slight, required for taking an impression of parts that in fact have no more solidity than the lips or the tongue, must of necessity cause some displacement; I therefore resort to other means for getting the shape of the lower portion; but for the upper portion, say half or three-quarters of an inch above and below the point where the muscular fibres are attached to the bones, I am enabled to get pretty accurate plastic impressions. I have always found much greater irregularity in the form of the soft parts, *behind* the edges of the opening, and which are out of view, than is seen on the anterior surfaces, which are pretty symmetrical. This irregularity of the shape of the posterior surfaces is caused by the abnormal position and form of the palatine bones, to the edges of which the long, slender muscles forming the columns of the soft palate are superiorly attached. The artificial roof being extended backward to a point where the fleshy tissue begins, I first get the form and breadth of the opening from that point as far down as the little pendant, nipple-like processes, by using a lamina of wax, not softened, attached obliquely to the end of a stick, paring the edges with a knife until the wax can be passed backward and forward, through the fissure, and is seen to correspond in shape. This lamina of wax, thus brought to the required shape, I afterwards extend downward by the addition of another and broader piece, which reaches as low as the union of the slender palatine muscles with the base of the tongue and the pharyngeus. The pattern thus obtained represents the flat, central portion, or *velum proper*, but to which afterwards are added certain lateral appendages, covering both the anterior and posterior surfaces of the fissure, and considerably increasing its size. To the edges of this flat pattern are added two wings of thin wax, extending from the top about one inch downward, and projecting obliquely forward, and so bent and shaped as to cover the anterior surfaces of the fleshy sides of the fissure. These wings are indicated by the letters *w w*, in figures 2, 3, and 4, representing the rubber velum. The lower margin of the wax pattern very nearly touches the muscular surface of the pharynx, and its rounded corners enter the narrow cavities made by the junction of the long palatine muscles with the pharyngeus, by which I ascertain the whole length required for the velum proper, and also its greatest breadth at its lower end. I now proceed with a wire probe, bent at right angles half an inch from the point, and which is guarded with a pellet of wax, to sound the depth and shape of the cavity behind the columns or edges of the fissure for some distance upward. Lastly, I take a small stick of soft wood, with a handle shaped on one end, and a flattened, bulb-shaped head, carved obliquely, on the other end. This bulb is to be covered with softened wax or warm gutta-percha, and then, by passing it through the fissure, and drawing it forward and upward, I am able to get an impression of the shape and size of the cavity above, and which is hidden from view by the projecting edges of the fissure. The head of the stick must have a broad, deep notch cut in its upper margin, so as to clear or admit the septum when taking the impression. By this last process we gain a knowledge of the shape of parts not visible to the eye, and where it is of great importance to have the artificial velum well fitted. By the aid of this impression I proceed to attach to each side of the wax model, and behind the wings, a longer and thicker lamina of wax, projecting obliquely backward, so that when placed in the mouth it will cover the posterior surface of the fleshy edges of the fissure, and also prolonged upward, half an inch or more beyond the upper end of the velum proper, so as to lie upon the projecting bony shelf." * * * *

"This wax model, then, with its lateral wings, and also the velum to be made from it, comes to be of a size very much larger than the mere width and length of the gap which it is designed to close. Many of those I have made, when held in the hand and examined, appeared truly formidable from their great size, but when looked at in the mouth, appeared small enough; in fact, I never yet had to alter my models to make a velum smaller, but have often had to enlarge them. From this it will also be understood that an artificial velum must be something more than a mere curtain suspended in the plane of the fissure, and just touching its fleshy edges when at rest. Such an appliance could effect no improvement in the speech, and would be liable to very frequent displacement by coughing, sneezing, or even the ordinary act of swallowing. But if the velum is made as large as the surrounding parts will possibly admit, it is then acted upon with force by the muscles in contact with it, and, what is also of great importance, it is, in great part, self-supporting, and even aids to bear the weight of the solid roof to which it is attached; so that in fact the only real necessity for an artificial roof is to fill up the gap in the bones, if there is one, and also to keep the velum from being carried backward in swallowing."

AMERICAN DENTAL REVIEW—AUGUST.

"SYPHILITIC PERIODONTITIS. By CHARLES KNOWER, D.D.S., M.D., of St. Louis.—Cases of an obscure nature and difficult to diagnose frequently present themselves to the dental practitioner, and if he be not cautious in his examination as to its seat and true cause, he is liable to commit serious errors, in inflicting unnecessary pain on his patient, and reflecting discredit on his professional ability.

"Of all complaints the dentist has to treat, odontalgia probably presents itself most frequently, and in the majority of cases the diagnosis as to its seat and cause is readily made, it being produced by an exposed nerve or inflammation of the dental membrane of a non-specific character, as frequently met with in teeth where the vitality has been destroyed by natural process or by caustic applications. In such cases, the treatment being quite evident, relief is given in a short time. But again, there are cases in which the practitioner is at a loss to determine the exact nature of the inflammation, there being no apparent cause of the disease, the patient not having taken cold in any way, and the tooth is found to be sound, as far as the objective symptoms may show, at the same time the subjective symptoms, as indicated by the patient, are of a very severe character, and the dentist, whose mission it is to administer relief may, from the obscurity of the case, and the urgent solicitations of suffering humanity, be induced to resort to his forceps too hastily. A little care exercised in ascertaining the cause would have indicated a course of treatment that would have proved equally as effectual as the forceps, and much less severe.

"A case illustrative of this came into my hands in August, 1859, which might, but for a careful investigation, have resulted more seriously than the loss of a single tooth. The patient came into the office about six o'clock P.M., complaining of a pain in the first superior left molar, which had been giving trouble since the night before. An examination of the tooth indicated showed it to be sound, with the exception of a small superficial decay, which had been filled a day or two before. The pain was of a dull, throbbing character, and the tooth sensitive to the touch, indicating periostitis; but the *query* was, what was the *cause?* The patient had not taken cold, and I could not attribute it to the pressure that would be required in introducing so small a filling, and inquired if much force had been exerted in filling, and the reply was no, which was confirmed when I removed the plug, which was of the *soft-shell* order. The patient desired the removal of the tooth, but I declined, not feeling at liberty to sacrifice a good tooth when I did not feel satisfied as to the cause of trouble, and therefore might increase what I desired to alleviate. Before I had examined the tooth, my attention was called to a cicatrix on the upper lip, bearing all the marks of a recently healed venereal ulcer, with its characteristic coppery hue; this aroused my suspicion and led me to make some indirect inquiries, but without eliciting anything satisfactory at this interview. I scarified the gum, and prescribed a dose of sulph. magnesia for the bowels, and tinct. myrrh to be applied to the gums as a counter-irritant, also a warm pediluvia on going to bed, and if no relief was had by morning, to call again. At seven o'clock the next morning the patient returned with symptoms increased, the tooth elongated and loose in its socket. I again questioned as to any venereal disease, but received no acknowledgment; but feeling assured there was some specific taint connected with the disease in the tooth, I, after consulting Dr. W. A. Cornelius, assumed the responsibility of treating it accordingly, and prescribed a mercurial course, at the same time directing leeches to be applied to the gums and mustard plaster externally. The patient returned next day complaining still more, the inflammation now extending to adjoining teeth. After consulting with Dr. Cornelius again, I yielded to the urgent request of the patient and removed the tooth that had first given trouble, thinking it would probably relieve the intense suffering, and tend to prevent the further extension of the inflammation. The tooth was removed, but without much alleviation of pain, as the inflammation in the adjoining teeth was now giving considerable trouble. I must here state that after another close interrogation on the *delicate* subject, enough was elicited to confirm the diagnosis of venereal taint which had acted the part of a predisposing cause, and was readily brought into action by the operation of filling the tooth, which undoubtedly was the exciting cause. The mercury was continued in combination with the iodide potassium, but without any decided improvement for the first day or two; but as soon as the system began to show the effects of the mercury, the inflammation was gradually dispersed.

"Everything connected with this case indicated it to be one of well-marked syphilitic character, and I again say might have resulted more seriously had not an anti-syphilitic course of treatment been given."

Dental Review, London—August.

"Collodion a New Base for Artificial Teeth.—The present may well be called an age of experiment, invention, and improvement, when the wonders of to-day are superseded by the novelties of to-morrow, and that which at one time was declared to have arrived at perfection must give place to an even more perfect arrangement.

"The profession has been revolutionized by the introduction of the hardened india-rubber base, and vulcanite has now become a household word. The dental depots abound in novelties—vulcanite teeth of all patterns, shapes, and sizes—vulcanizers and vulcanizing flasks have variously commanded attention. The war set in with steam patents, dry patents, and superheated patents; every hour brought its novelty, until the profession, surfeited with vulcanite in all colors, and tired of the many improvements flooded in upon them, awoke from its trance to cry, 'Hold! I'll hear no more.'

"Vulcanite was not, however, entirely to take the place of gold, although it might of bone; vulcanite was *not* applicable in every case, and was *not* to be the ruin of the profession. Highly valuable as an auxiliary, an auxiliary alone it must remain.

"No sooner has this fever somewhat abated than a new rival appears unexpectedly upon the scene. On the fourth of May last, letters-patent were sealed to John Macintosh for 'Improvements in Setting Artificial Teeth,' and thus runs the specification:—

"'This invention has for its object improvements in setting artificial teeth. For this purpose I employ COLLODION, (or a solution of gun-cotton or fibre in a solvent;) this material I apply to the teeth to be set when in a fluid or soft state, so that, when it hardens, the teeth may become securely imbedded in it. A form or mould is by preference employed to bring the mass of collodion in which the teeth are set to the proper form to fit the mouth. Cotton or other fibre may be imbedded in the collodion to increase its toughness, and the outer surface or the whole of the collodion may be colored to look like the natural gum.'

"We will not at present attempt anything like criticism of these so-called 'improvements,' but simply give, in the words of the inventor, some particulars of the process. A model of the mouth is taken in the usual way, and a fac-simile of the piece to be produced moulded in wax with the teeth imbedded in it as in the vulcanite. The collodion is prepared in the usual way, and in order to increase its toughness is mixed with a quantity of 'short cotton fibre,' and then evaporated until the collodion is brought to a 'plastic and putty-like state.'

"'If it be desired to obtain a hard setting, I add to the collodion and thoroughly incorporate with it powdered gum-copal, in quantity varying according to the hardness desired; if great hardness is required, I employ as much as 20 per cent. The collodion, while still warm, I carefully press into the mould around the teeth, as in filling a mould with the compound of india-rubber and sulphur in making teeth of vulcanite, as is well understood; I then place the two parts of the mould together, and force them together by means of the screw with which the box containing them is fitted; thus the collodion between the two parts of the mould is forced into every crevice of it; and in order that the collodion may remain thoroughly plastic, the mould is kept heated to about 200° Fahrenheit; when the two parts of the mould are pressed close together, the mould is allowed to cool, and when cool, the teeth with the setting, which is then complete, are removed.'

"The collodion is colored to resemble gum by means of alkanet root, and may be colored throughout or only with a gum surface.

"'If it be desired to obtain a plate, or thin, flexible setting, I proceed in a similar manner to that already described, but I produce the two forms of which the mould consists in a readily fusible metal (a mixture of tin and lead answers well) in place of a plaster, as before described; but in this case, after producing the wax model, the teeth are not left in it while the plaster cast is taken, but are first carefully removed. The collodion is formed into a sheet of the desired thickness, and there is cut from this sheet, with the assistance of template previously prepared by measuring from the mould, a piece of suitable form to produce the setting. I then lay the piece of sheet collodion, previously rendered plastic by heat, in its place in one-half of the mould, and the other half is then put over the first, and pressed firmly down upon it by the use of a screw-box, as before explained. The mould is heated to about 200° Fahrenheit, so as to keep the collodion perfectly plastic, and the pressure applied is sufficient to force the collodion into every crevice of the mould. When the mould is cold and the collodion is set, the collodion plate is removed. The teeth are afterwards fitted in their places on the plate, and are fixed either by metal pins, or, as is preferred, the teeth are, as before mentioned, made with a passage up the centre, which is filled with collodion, and afterwards the collodion in the tooth and the plate at the part where the tooth is to be fixed are both moistened with ether, and they are pressed in contact till the solvent evaporates, when they will be found firmly attached the one to the other.

"'Collodion may also be employed for setting in the same manner as sea-horse tooth is employed, and as is well understood by dentists. In this case a block of collodion (mixed with fibre and copal, if considered desirable) is formed and afterwards carved out to the form desired, the teeth being fitted and fixed as when sea-horse tooth is employed.'

"The advantages claimed for collodion, or a compound of collodion, as a setting for artificial teeth, are, first, that it does not decompose or become fetid in the mouth; it is also free from metallic taste. Secondly, it is not liable to lacerate the gums; and from the natural flesh-tint that can be given to it, it is not easily detected when in use. Thirdly, being specifically lighter than any substance at present employed, and a perfect non-conductor, it consequently can be used upon the most tender gums.

"Although this compound has not been worn more than three months to prove its durability, the most careful experiments have been tried as to its non-absorbing qualities and indestructibility for the purpose of insulating telegraphic wires in lieu of gutta-percha and india-rubber, which are both absorbents."

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEO. J. ZIEGLER, M.D.

Sympathetic Irritation.—In the course of his interesting lectures in the Lancet "On Pain, and the Therapeutic Influence of Mechanical and Physiological Rest," MR. JOHN HILTON makes the following instructive remarks on this subject: "Pain in any part, when not associated with increase of temperature, the local symptom of local inflammation, must be looked upon as sympathetic pain, an exalted sensitiveness of the nerves of the part, and it is to be regarded as a pain depending upon a cause situated remotely from the part where the pain is expressed. In availing ourselves of these so-called sympathetic pains, (and no doubt they are in a certain sense sympathetic pains,) I should like to displace, to throw aside, the term 'sympathy' as something too ideal, and would ask you to consider such pains in their obvious, intelligible, and more natural relation. I would solicit you to mark them as resulting from some direct nervous communication passing between the part where the pains are expressed and the real and remotely situated cause of the pain.

"I admit that I formerly looked at this subject very loosely, so that if a patient complained of pain between his shoulders, or anywhere else, I never asked myself, What association of nerves will explain this pain? But, beyond doubt, that is the proper way of regarding this question. If there be pain, with its hidden cause, in any one particular spot, it can only be by tracing the nerves of and from that spot that we can hope to arrive logically at the real cause of the symptoms, and so divest the case of its obscurity. Applying this method to practice, it is through the medium of the distribution of the cerebro-spinal nerves of sensation (the fifth nerve being the true cranial sensitive nerve) that we are enabled to explain those pains which are called sympathetic, but which result from a continuity of nerves between the cause and the effect, the disease and the symptom. It is impossible, I believe, to affix too much practical significance to, or over-estimate the value of, this simple statement regarding the relation of pain as a symptom of disease to the diagnosis of the kind of case in which pain forms a prominent symptom. * * * * * *

"Now, external pain, or pain upon the surface of the body, may be considered, if properly appreciated, as an external sign or demonstration of some distant derangement. If the pain persists—if it does not depend on any transient cause—it becomes necessary to seek the precise position of the pain; and, as soon as we recognize the precise position of the pain, we are enabled, by knowing the distribution of the nerve or nerves of that part, to arrive at once at the only rational suggestion as to what nerve is the exponent of the symptom; and by following centripetally the course of that nerve, and bearing in mind its relation to surrounding structures, we shall, in all probability—indeed, most likely—be able to reach the original—the producing—cause of the pain, and, consequently, adopt the correct diagnosis.

"Patients judge most frequently of the position of their own disease by the situation of the painful symptoms most prominent or most palpable to their senses; while we surgeons, relying upon our knowledge of the true cause of the symptoms, judge of the seat of the disease by a just interpretation of the symptoms through the medium of normal anatomy; and we know by experience that such symptoms may exhibit themselves at, or far removed from, the actual seat of the disease; this latter remark being peculiarly applicable or pertinent to the subject of disease of the spine. * *

"In elucidation of this statement, and of my conviction as to the value of pain as a symptom in relation to diagnosis, let me put the subject in a plain and practical way. You know that the upper and anterior part of the external ear and the auditory canal derive their sensibility from the fifth cerebral nerve, which has its direct nervous associations with the interior of the head, the forehead anteriorly, the temple, face, eyes, nose, teeth, and tongue; while the posterior part and the anterior part of the pendulous portion of the external ear derive their sensitive nervous supply from the spinal nerves issuing from the spine between the second and third cervical vertebræ. It may appear to some of my anatomical friends rather remarkable that I should have depicted by coloration the precise distribution of the two sensitive nerves supplying the exterior auditory apparatus.* It arises out of a curious circumstance. Some time ago I was anxious to depict this piece of anatomy from my own dissections, but I did not feel quite satisfied as to the exact line of demarkation where the cervical nerve supplied the skin of the ear and where the fifth nerve was distributed. A short time since, a man, who is now undergoing the punishment of penal servitude, attempted to cut his wife's throat. In drawing the razor across her neck, he divided the auricular branch of this second cervical nerve, and gave me the opportunity of ascertaining the distribution of that nerve. My dresser, as well as myself, pricked with a needle over the whole of the auricular surface, and ascertained minutely the precise position of the loss of sensation consequent upon the division of the cervical nerve; while the skin which retained its sensation indicated with equal precision the distribution of the fifth cerebral nerve upon the external ear.

"When a patient, then, tells us that he has earache, or pain in or upon his ear, we ought to ascertain whether it is pain upon the back part of the ear, or whether it is in the auditory canal, or upon the anterior and lower portion of the ear; because it is obvious that the real cause must be widely different in the two cases. If the patient has pain in the auditory canal, or the upper portion of the anterior part of the external ear, the pain must be, without question, (I hope I shall not be considered as putting this too dogmatically,) the result of some irritation or diseased condition or cause associated with the fifth cerebral nerve, and this gives precision to further inquiry.

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* In reference to a drawing illustrative of this distribution.

"Now, we know very well that there is often a simultaneous occurrence of toothache and earache. The same nerve supplying the auditory canal and the anterior portion of the ear supplies also the teeth; hence, in all probability, this sympathetically associated influence. I think you may take a further step in the other direction, and say that earache is often accompanied with stiffness of the jaws, the fifth nerve supplying the masticatory muscles which fix the jaw. So we know perfectly well that disease affecting any part of the anterior third of the tongue is a very common cause of pain in the auditory canal, the tongue and the auditory canal being supplied by the fifth nerve. These auricular pains are pretty constant in cases of malignant disease attacking the side of the tongue or the part toward the apex. Local morbid conditions are sometimes induced by irritating secretions resulting from the free nervous communication between the different parts which derive their sensibility from the fifth nerve.

"A professional friend had an enlarged gland below the external ear. The real cause of this was not quite apparent, and so he requested me to look at it. There was a slight discharge of morbid secretion in the auditory canal. We argued the question together, and I said, 'Very likely it may be the result of a decayed tooth. Irritation from it may be conveyed to the auditory canal, and induce this morbid secretion; that morbid secretion may produce slight excoriation, and that excoriation, aided by lymphatic absorption, may explain the existence of the enlarged gland.' The tooth was extracted, and all the other local morbid conditions disappeared, and there was no recurrence of these local symptoms.

"In order to show the practical application of the views I have just advanced, I may mention a case that occurred last year. A gentleman, aged sixty-three, came to consult me regarding an ulcer situated upon the left side of his tongue. On examination, I there found an elongated, very ugly-looking ulcer, nearly as large as a bitter almond, and of much the same shape. The surrounding parts were swollen, hard, red, and much inflamed, and a lymphatic gland was enlarged below the horizontal ramus of the lower jaw on the same side. I saw in the mouth a rugged tooth, with several projecting points upon it, opposite the ulcer. This gentleman observed to me, 'Having suffered a good deal from earache on the left side for a long time, without experiencing any relief from medical treatment, it was thought that I must be gouty, and I went to a surgeon who treats gouty affections of the ear. This surgeon paid great attention to my ear, but certainly did not do it the slightest degree of good. I accidentally mentioned to him that I had had for some time past something the matter with my tongue. On seeing it, he immediately began to apply caustic vigorously; moreover, not satisfied with applying it himself, he gave it to my wife, that she might apply it at home. I have gone on in this way from day to day until the pain in my ear is very considerably increased, and the ulcer on my tongue is enlarging: so I have come to you for your opinion regarding my state; for, to tell you the truth, I am afraid of a cancer in my tongue.' I thought I saw the explanation of this patient's symptoms. The pain in the ear was expressed by the fifth cerebral nerve, and there was a rugged tooth with little projections upon it, some of which opposed and touched a small filament of the lingual-gustatory branch of the fifth cerebral nerve in the surface of the ulcer. I detected this little filament by placing upon it the end of a blunt probe. It was situated near the centre of the ulcer, and was by far its most exquisitely painful part. This exposed nerve caused the pain in the auditory canal which led him to go to the aurist, and the aurist, instead of confining himself to his own department, seized the tongue, put nitrate of silver upon the whole of the ulcer, and increased the mischief. I simply desired that the ulcer should be left at rest; that the patient should not talk nor move his tongue more than necessary, so as to avoid touching the tooth; that he should wash his mouth with some poppy fomentation, and take a little soda and sarsaparilla twice a day. In three days about one-third of the ulcer was healed up, actually cicatrized, the enlarged gland nearly gone, and the earache much diminished.

"This rapid improvement might appear something like exaggeration, but all surgeons know that the tongue has those elements within it which contribute to the most rapid repair of injury. I do not know any tissue that repairs itself more rapidly. It is abundantly supplied with capillaries filled with arterial blood, and has an enormous distribution of nerves, and those are the two elements that contribute to rapid reparation. It was quite clear that the treatment was in the right direction—viz., that of giving rest to the tongue and ulcer. After a few more days I requested him to consult a dental surgeon with respect to the propriety of taking off the points of the tooth. This was afterwards done, and the patient soon lost his anxiety about cancer, his earache, and all the severe indications he before had experienced."

Reproduction of Blood-vessels and Nerves.—"A paper was read at the last meeting of the Academy of Sciences by M. Jobert de Lamballe, in which the progress of vascular and nervous reproduction, as observed during the cicatrization of engrafted skin, is accurately studied. The operation serving as text for this essay was undertaken for the purpose of remedying a deformity resulting from the removal of a secondary cancer. The region occupied by the unsightly cicatrix was the right eyebrow, the inner angle of the eye, and ala of the nose on the same side. In providing a flap destined to cover this unbecoming scar, the surgeon dissected off from the forehead a somewhat pear-shaped patch of skin, (the exact size requisite having previously been ascertained by measurement,) with the exception of a narrow slip, or pedicle, reserved for the conveyance of vascular supply to the flap; the whole was completely detached from the surrounding integument, and turned down upon the scar, (itself also deprived of its imperfect superstratum of cutis,) and there secured by the interrupted suture. The engrafted slip of tissue—much in the position of a man who has purchased a practice in a new neighborhood, with a limited introduction, to use a horticultural phrase—took kindly to its new soil, and by the eighth day the sutures were dispensed with. The temperature of the transplanted skin remained low, however, and its texture flabby and inelastic; a slight prick with a pin on its surface was not followed by bleeding, and pressure or tickling was referred *to the pedicle* alone. That some vascular supply did, however, reach its vessels was incontestable, for the part presented no appearance of gangrene. Day after day the same experiments were repeated; at length a little blood followed the slight puncture, and a slight sensation was perceptible in the part pricked. These signs of returning vitality steadily augmented, and by the end of the third month after the operation, the graft was deemed to possess sufficient independent vigor to shift for itself; and the little isthmus being declared unnecessary, the flap was isolated, and its cut extremity turned down toward the inner angle of the eye, where the scar hitherto had purposely been left uncovered. The deformity was thus completely remedied, and the cure most successful. M. Jobert, in his remarks upon the way in which the vascular and nervous relations are established between tissues thus artificially brought into contact, draws especial attention to the consecutive advance of the two functions, the one in the wake of the other; the new circulation entailing the new innervation, and the perfect development of the former being immediately followed up by a similar progress in the latter. The author also expresses it as his opinion, that the mode in which the correct sensibility of the engrafted tissue is restored after transplantation by means of its communications with the part into which it is deposited, is a proof of the unity and identity of the sensitive function all over the body."—(*Paris Correspondent of Lancet.*)

"*Neuralgia with Deafness, cured instantaneously by the Extraction of a Tooth.*—M. Ed. Vautier records (*Gaz. des Hôpit.*, 14 June, 1860,) a case of this. The subject of it was a very nervous, slender woman, who had suffered for about four months with intense neuralgic pains, radiating through almost all the teeth, and also the muscles of the anterior region of the left side of the head. There was constant lachrymation of the left eye, and from the moment of the attack complete deafness in the ear of the same side. A number of physicians had been consulted, and sulphate of quinia, flying blisters, and atropia, in succession, tried without giving relief.

"When seen by Dr. B. she was suffering severely; had long been deprived of sleep, and could not chew her food. The teeth were examined with care, but no one could be found carious. The wisdom tooth on the left side seemed, however, slightly painful on being touched, and loose. She was advised to have this tooth extracted, but with some temper refused. However, some days afterwards, her physician again advising it, she consented, and the tooth was extracted by M. Vautier. The pains at once ceased, and her hearing was restored. A month has since elapsed without any return of her complaint. She seems to be permanently cured.—*Journal de Méd. de Bordeaux*, June, 1860."—(*American Journal of Medical Sciences*, October, 1860.)

"*Injury to the Face from the Kick of a Horse.* By J. S. Conkey, M.D., of Antwerp, N. Y.—December 22, 1857, I was called to see Mr. J. R., aged fifty-six years, who had been badly injured by a kick from a horse. Found him bleeding profusely from the anterior and posterior nares; his nose completely flattened to his face, the ossa nasi being broken into fragments. On examining the case more closely, I found a fracture of the superior maxillary bone, extending from where the nose and upper lip meet to the throat, fracturing the septum narium and sphenoid bone, thus separating the whole palatine arch; which, including all the teeth, could be easily and freely moved about in the mouth.

"After adjusting the nasal bones, and properly securing them in place, I fitted a piece of soft wood to the front teeth, letting the ends project a little from each corner of the mouth. To this piece of wood I applied a strong tape, and passing the ends over the head, tied them firmly, thus completely securing the fractured parts in apposition. The bleeding was gradually stopped by the formation of coagula in the nose, which were allowed to remain till all tendency to hæmorrhage had ceased. The case progressed favorably, and in four weeks the dressings were removed and the patient able to be out. In ten weeks from the date of the injury he was able to work on his farm, and could use his teeth for masticating purposes as well as ever. He now reports himself entirely well, and there is no deformity left."—(*American Journal of Medical Sciences*, October, 1860.)

Effects of Tobacco.—In a letter to the *London Times*, republished in the *Medical Times and Gazette*, SIR BENJ. BRODIE expresses his general disapprobation of the habitual use of tobacco, and makes the following observations on its deleterious effects:—

"The effects of this habit are indeed various, the difference depending on difference of constitution and difference in the mode of life otherwise. But, from the best observations which I have been able to make on the subject, I am led to believe that there are very few who do not suffer harm from it, ~~to a greater or less extent~~. The earliest symptoms are manifested in the derangement of the nervous system. A large proportion of habitual smokers are rendered lazy and listless, indisposed to bodily and incapable of much mental exertion. Others suffer from depression of the spirits, amounting to hypochondriasis, which smoking relieves for a time, though it aggravates the evil afterward~~s~~. Occasionally there is a general nervous excitability, which, though very much less in degree, partakes of the nature of the *delirium tremens* of drunkards. I have known many ~~individuals~~ to suffer from severe nervous pains, sometimes in one, sometimes in another part of the body. Almost the worst case of neuralgia that ever came under my observation, was that of a gentleman who consulted the late Dr. Bright and myself. The pains were universal, and never absent; but during the night they were especially intense, so as almost wholly to prevent sleep. Neither the patient himself nor his medical attendant had any doubts that the disease was to be attributed to his former habit of smoking, on the discontinuance of which he slowly and gradually recovered. An eminent surgeon, who has a great experience in ophthalmic diseases, believes that, in some instances, he has been able to trace blindness from amaurosis to excess in tobacco smoking; the connection of the two being pretty well established in one case by the fact that, on the practice being left off, the sight of the patient was gradually restored. It would be easy for me to refer to other symptoms indicating deficient power of the nervous system to which smokers are liable; but it is unnecessary for me to do so; and, indeed, there are some which I would rather leave them to imagine for themselves than undertake the description of them myself in writing.

"But the ill effects of tobacco are not confined to the nervous system. In many instances there is a loss of the healthy appetite for food, the imperfect state of the digestion being soon rendered manifest by the loss of flesh and the sallow countenance. It is difficult to say what other diseases may not follow the imperfect assimilation of food continued during a long period of time. So many causes are in operation in the human body which may tend ~~in a greater or less degree~~ to the production of organic changes in it, that it is only in some instances we can venture to pronounce as to the precise manner in which a disease that proves mortal has originated. From cases, however, which have fallen under my own observation, and from a consideration of all the circumstances, I cannot entertain a doubt that, if we could obtain accurate statistics on the subject, we should find ~~that~~ the value of life in inveterate smokers is considerably below the average. Nor is this opinion in any degree contradicted by the fact that there are individuals who in spite of the inhalation of tobacco smoke live to be old, and without any material derangement of the health; analogous exceptions to the general rule being met ~~with~~ in the case of those who have indulged too freely in the use of spirituous and fermented liquors.

MISCELLANY.

In the concluding lecture of the course on experimental pathology in the *Med. Times and Gaz.*, Sept. 29, M. C. BERNARD thus gives his views "on the connection existing between physiological phenomena and the physical properties of the tissues which produce them. It may be correctly asserted in a general manner, that the physiological properties of muscles, nerves, and all other tissues, coexist with physical and chemical phenomena of a peculiar nature, and that a direct relation is to be found between the degree of intensity which each class of properties exhibits. Shortly after death the vital characteristics of the tissues disappear along with their physical and chemical properties; thus, in muscles, the electric current fails at the moment when contractility is extinguished; and in nerves the electro-tonic power disappears at the same moment as physiological excitability. But although we are tempted to view this connection between physical and physiological phenomena in the light of the necessary relations between cause and effect, I rather believe it to be a mere coincidence. It must not be supposed that the vital properties persist as long as the physical and chemical phenomena have not disappeared. A remarkable instance of this reciprocal independence is afforded by the following experiment:—A rabbit being killed by the section of the medulla oblongata, both nervous excitability, muscular irritability, and the electric muscular current disappear by degrees, and are totally extinct a few hours after death. But when the animal is poisoned with upas a very different result is observed; the normal irritability of the muscles disappears twenty-five or thirty seconds after death, while the electric current persists during four or five hours. In the same manner the alkaline reaction of muscles is not inseparably connected with their contractile power, nor the electro-tonic state in nerves, with the property of transmitting the impulse of the will. Far be it from us to maintain that the disappearance of the vital properties of any given tissue is not in all cases the result of a material change; we only intend to show that in more cases than one that change is yet unknown and must be sought for in a different direction; the physical and chemical properties hitherto known to exist in our tissues are the inseparable attendants of the vital action, but do not appear entirely to create its powers."

The following case, in illustration of the capacity for reunion of organic structure after complete separation, is given (*ibid.*) upon the authority of the *Bull. de Thérap.*: "M. Azam relates an additional case in proof of the desirableness of attempting to secure the reunion of separated parts. A man, while fashioning a piece of wood by means of a very sharp hatchet, chopped off an oblique slice of the index finger, three centimetres in length, the line of separation dividing the nail into two parts, and carrying away almost all the pulp of the finger. He fainted; but a neighbor who came to his aid ten minutes after the accident, bound on the separated part, and the most complete union promptly followed."

In a letter from Edinburgh to the *Amer. Med. Times*, Dr. David P. Smith gives an account of several operations by Prof. Syme, among which is the following: "An epithelial cancer of the lower lip was removed by an oval incision with scissors instead of our ordinary V-shaped incision, care being taken to unite by suture the skin with the mucous membrane. I was surprised to find that immediately after the operation, although there was considerable loss of tissue, he was able to completely close his lips. I am not sure but that it gives less deformity than the V-shaped incision."

Dr. Wm. H. Thomson presents (*ibid.*) the following summary from the *Brit. and For. Med.-Chir. Rev.*, of some observations on the influence of the nervous force on the color of the venous blood: "In a communication to Du Bois-Raymond, H. Meyer mentions some experiments which show the influence of nervous action on the color of the venous blood. After section of the ischiatic nerve, the blood from a cutaneous vein in the neighborhood was at first still dark, but a few minutes later it issued with a bright-red color, and continued to do so after seven days. An analogous result was obtained from six other similar experiments. He states that as early as 1820, Krimer stated as the results of his experiments 'that the bright-red blood of the arteries passes as such into the veins without becoming, during its passage in the veins, dark red, as soon as it is, by means of section or destruction of the nerves, deprived of the influence of the latter.' These observations gain at present in interest through Bernard's discovery regarding their varieties in the color of venous blood of glandular organs, according to their condition of activity or rest."

The *Amer. Med. Times* gives the following sketch of the manufacture of, and trade in toothpicks: "Where do the toothpicks come from? It is supposed that the Yankee, when he first felt the necessity of cutting a stick of timber in order to provide himself with a toothpick, gained the knowledge of whittling, and has since kept and improved upon the lesson. A New Englander will produce a toothpick with his knife from almost everything except a bar of iron, but with all his inventive genius it has remained for the natives of Chili to supply this toothpicking nation with a large proportion of the instruments for gratifying their habit or necessity. The aged and decrepit and the young of both sexes of Chili are engaged in preparing those little orange sticks that one finds at every restaurant and hotel in the city and country. These they whittle out with astonishing rapidity, at the rate of five or six hundred in an hour. The sticks are then packed in bundles of a thousand each, and sent to this city; being imported expressly by a lady in Division Street, whose son superintends their manufacture in Chili. Here the toothpicks are sold for twenty cents a thousand, and scattered all over the country—placed in the restaurants and hotels, and in the hands of every toothpicking Yankee in the Republic. To such an extent is this traffic carried, that the proprietors of the Astor House alone purchase eight or ten barrels of every importation, and retail them among the country hotels. A restaurant with a good run of custom will consume about twenty thousand toothpicks in three weeks."

In the course of a review of a prominent work on the Institutes of Medicine, in the Sept. number of the *New Orleans Med. and Surg. Jour.*, Dr. B. Dowler thus alludes to the prevailing opinions respecting the seat of the vital principle: "Physiologists have assigned the vital principle to various tissues of the economy as its seat. The Jewish lawgiver defines the vital principle as follows: '*For the life of all flesh is the blood thereof.*' (Leviticus, xvii. 14.) Harvey assigned the special seat of the vital principle to the blood; Hunter maintained the vital principle of the blood; Dr. Brown-Séquard says that all the nervous and contractile tissues in the brain, the spinal cord, nerves, muscles, etc., may, after having lost their vital properties, their life, recover those properties again, and in some respects be resuscitated by injecting fresh oxidated blood into the arteries, both in men and animals recently dead; all of which he has established by actual experiments. Professor Carpenter says that the 'physical, chemical, and other relations of the blood, are quite subordinate to its *vital* reactions'—'its vital endowment' being the 'life of the body generally.' In fact, modern physiology is drifting rapidly toward, or rather is anchored with that of Israel's lawgiver." Inasmuch, however, as the vital principle is diffused throughout the entire economy—to every granule, cell, and fibre thereof—though relatively more actively manifested in the fluids than in the solids, it cannot be said to have its seat exclusively in any particular part, but to reside in the whole organism.

In a paper on some rare accidents (*Lancet*, Oct. Rep.) Mr. Weeden Cooke offers the following strong testimony in favor of the powerful styptic properties of the perchloride of iron: "No surgeon should ever be without a solution of the perchloride of iron. Its styptic power is so remarkable that I have myself stopped the hæmorrhage from a wound of the profunda femoris by its aid; and do not doubt that, with a pledget of lint saturated with this fluid and by pressure, even a wound of the carotid may be sufficiently controlled to give time for operative procedures."

In one of a series of very instructive lectures on the physiology of the circulation in the *Am. Med. Monthly*, Prof. Dalton makes the following remarks on the quantity of the various secretions from the blood: "Without going over all the details by which these quantities have been ascertained, I will merely mention that in each case the estimates have been arrived at by direct experiment, so that nothing is left to surmise; and that the numbers given are always the minima, rather than the maxima, of those adopted by the best authorities. The total quantity of *saliva* secreted daily is about 20,164 grains, or little less than three pounds avoirdupois. The quantity of *gastric juice* is much greater. The most moderate estimate, based upon actual observation, gives fourteen pounds as the total daily amount; and from my own experiments, I have no doubt that this is substantially correct. The *pancreatic juice*, again, seems to be considerably less in amount—not much over one-third of a pound in twenty-four hours. From the very careful and judicious observations of Bidder and Schmidt, the daily quantity of *bile* is found to be not far from two and a half pounds. The quantity of the *intestinal juice* has never been ascertained with any approach to accuracy, though it is no doubt quite large, since the follicles of Lieberkühn are very abundant, and the extent of secreting surface in the intestine not less than from seven to eight square feet. At least from nineteen to twenty pounds of fluid, therefore, are separated from the blood by the glandular organs every day. But we must recollect that these secretions are all reabsorbed in the natural course of the circulation, and again enter the vascular system at different points. The blood, accordingly, is not impoverished by this abundant supply of secreted fluids, but only renovated and altered; for the quantity of material withdrawn from it by one process is constantly returned to it by another."

In his summary of foreign literature (*ibid.*) DR. L. ELSBURG gives, from the *Gaz. Méd. de Paris*, the following resumé of Drs. J. M. PHILIPEAUX's and A. VULPIAN's experimental researches on the regeneration of nerves separated from nervous centres: "Their principal result seems to be the determination of the important fact that the alteration which the nervous tubes undergo when nerves are cut or resected, is limited mostly to the disappearance of the medullary substance, and that the re-establishment of the normal condition consists principally in reappearance of this substance. From this it follows that the altered condition is not a destruction, but a modification of these tubes, and that their return to the healthy physiological state is not a regeneration in the proper sense of the word, but simply a restoration."

In an interesting article on the state of medicine and surgery in China, by M. G. PAUTHIER, in *L'Union Médicale*, a translation of which is given by Dr. Steiner, in the *Amer. Med. Monthly* for Sept., it is stated that "the practice of medicine and surgery is, in China, a very honorable profession, at the head of which is an Academy of Medicine, (*Tai i youan,*) located at Pekin. The object of the latter is to maintain, in all its integrity, the science of medical practice, which dates from 3000 years before our era, and to direct those entering upon such a career. The members composing this Academy are 115, 15 of whom are imperial physicians, (*Yu i,*) 30 practitioners, 40 doctors of medicine, and 30 aspirants. The imperial physicians are, in turn, on duty near the emperor and imperial family. They are often dispatched by the emperor to attend upon princes, princesses, ministers of state, and other great functionaries, when his majesty hears that they are sick.

"Chinese medicine divides all diseases in *nine* great divisions, as follows: 1. Those affecting the pulse violently; 2. Those affecting it moderately; 3. Diseases produced by cold; 4. Diseases peculiar to women; 5. Cutaneous and painful diseases; 6. Diseases needing bleeding; 7. Diseases of the eye; 8. Diseases of the mouth and teeth; 9. Diseases of the bones. The physicians seem to have a tolerably good knowledge of anatomy, if we dare judge by the plates contained in their books. Their physiology rests on the system of two principles, *Yang* and *Ying*, or the *strong* and *weak* principle; the *male* and *female* principle, whose *equilibrium* and *harmony* constitute *the normal state*, and the predominance of either a *diseased* condition. Semeiology seems somewhat advanced with them; the practice of medicine having been, so to speak, hereditary in families, observation of disease has produced the art of recognizing them, which has been pushed very far."

In the report of a case of extensive compound fracture of the cranium, with destruction and exposure of part of the brain, DR. BEDFORD BROWN, of Yanceyville, N. C., gives, in the *Amer. Jour. Med. Sci.* for Oct., the following account of the effects of a mixture of sulphuric ether and chloroform upon the circulation of that organ: "It is conceived by the profession that under the impression of chloroform the actual vascularity of the brain is increased; that absolute congestion takes place. The present case afforded an ample opportunity to determine this question definitely. Whenever the anæsthetic influence began to subside, the surface of the brain presented a florid and injected appearance. The hæmorrhage increased, and the force of the pulsations became much greater. At these times, so great was the alternate heaving and bulging of the brain, that we were compelled to suspend operations until they were quieted by a repetition of the remedy. Then the pulsations would diminish, the cerebral surface recede within the opening of the skull, as if by collapse, the appearance of the organ becoming pale and shrunken, with a cessation of the bleeding. In fact, we were convinced that diminished vascularity of the brain was an invariable result of the impression of chloroform or ether. The changes above alluded to recurred sufficiently often, during the progress of the operation, in connection with the anæsthetic treatment, to satisfy us that there could be no mistake as to the cause and effect. Again, these changes began invariably to appear with the earliest influence of the remedial agent. As consciousness diminished, in a corresponding ratio there was diminution of vascularity; and as the mental powers returned, the contrary would occur."

In a notice of the transactions of the Med. Soc. of the State of N. Y., (*ibid.*,) it is mentioned that "the sixteenth communication is the history of a case of facial paralysis in a lad fourteen years of age, related by Dr. F. Evarts, of Oswego. The paralysis was, probably, dependent upon the irritation caused by the evolution of the second molar tooth of the upper jaw; it disappeared after the free lancing of the gums, the use of mild cathartics to keep the bowels soluble; frictions to the face with equal parts of soap liniment and tincture of capsicum, and the application of galvanism."

In a paper transmitted by Dr. Livingstone to the British Association for the Advancement of Science, he describes the following among other customs of the inhabitants of Zambesi: "Many have the upper and middle as well as the lower part of the ear bored, and have from three to five rings in each ear. The hole in the lobe of the ear is large enough to admit one's finger, and some wear a piece of bamboo about an inch long in it. Brass and iron bracelets, elaborately figured, are seen; and some of the men sport from two to eight brass rings on each finger, and even the thumbs are not spared. They wear copper, brass, and iron rings on their legs and arms; many have their front teeth notched, and some file them till they resemble the teeth of a saw. The upper-lip ring of the women gives them a revolting appearance; it is universally worn in the highlands. A puncture is made high up in the lip, and it is gradually enlarged until the pelele can be inserted. Some are very large. One we measured caused the lip to project two inches beyond the tip of the nose; when the lady smiled, the contraction of the muscles elevated it over the eyes."

In a review of Dr. Hamilton's valuable work on fractures, in the *Louisville Med. Jour.*, it is stated that he prefers the use of a gutta-percha splint for the treatment of some of the fractures of the lower jaw, and gives the following directions for its preparation and employment: "'The mode of preparing gutta-percha, and of adapting it between the teeth, is as follows: Dip a couple of pieces of the gum, of a proper size, into boiling water, and when they are sufficiently softened, mould them into wedge-shaped blocks, and having wrapped each block with a piece of cotton cloth, carry them to their appropriate places between the back teeth; immediately press up each horizontal ramus of the jaw until the mouth is sufficiently closed, and the line of the inferior margin is straight; in this position retain the fragments a few minutes, until the gum has sufficiently hardened. Meantime, it will be practicable, generally, to introduce the fingers into the mouth, and to press the gutta-percha laterally on each side toward the teeth, and thus to make its position more secure. When it is sufficiently hardened, remove the splints for the purpose of determining more precisely that they are properly shaped and fitted.' He advises, in addition, the use of a modification of the common four-tailed bandage."

According to the *Quarterly Jour. of the Chem. Soc.* (*Chemical News*, August 11,) "the experiments of Mr. Fairlie and Mr. Scrugham have pretty well demonstrated that commercial creosote is mainly a mixture of two homologous bodies, namely, hydrate of phenyle, or carbolic acid, and hydrate of cresyle. The former of these boils at 184° C. the latter at 203° C. Their formulæ differ by the ordinary increment C_2H_2, and are—

Hydrate of Phenyle . . . . $C_{12}H_6O_2$
Hydrate of Cresyle . . . . $C_{14}H_8O_2$

Mr. Fairlie observed that during the distillation of hydrate of cresyle it suffers partial decomposition; the liquid becomes dark in color, a little water is given off, a small quantity of creosote comes over at a lower boiling point, and a black residue remains in the retort. He believes it to be then partially converted into hydrate of phenyle."

The following method of tempering steel is given by the *Sci. Amer.:* "Cast-steel may be hardened by plunging it at a red heat into naphtha previously heated to 200°, and, as soon as the naphtha begins to boil, withdrawing the steel and plunging it into cold water. It is stated that this process will make the steel hard, and, at the same time, preserve it from flaws, cracks or twist."

In relation to this subject, a correspondent of the same paper states, "that if you dip steel at a red heat which is barely distinguishable in a tolerably dark place, such as the bottom of a tub, it will thoroughly anneal, and that you can in that way anneal steel which will scarcely anneal in any other way."

It is said (*ibid.*) that "a Belgian named Stipheen, of Ghent, has made a discovery which may be of some utility; it is, that the rusting of nails employed to fasten the branches of fruit trees to walls can be prevented by knocking into the wall at the same time as the nail a small piece of zinc. In giving an account of his discovery to the Agricultural Society of Ghent, M. Stipheen produced nails which had been eight years in walls in contact with a piece of zinc, and which were not at all rusty." This principle of associating different metals to prevent oxidation may prove of practical value in the preservation of instruments from rust.

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Memoranda Medica, or Note-Book of Medical Principles, being a Concise Syllabus of Etiology, Semeiology, General Pathology, Nosology, and General Therapeutics, with a Glossary for the use of Students. By Henry Hartshorne, A.M., M.D., Professor of Theory and Practice of Medicine in the Medical Department of Pennsylvania College, etc. etc.

12mo., pp. 190. J. B. Lippincott & Co.: Philadelphia, 1860. As its title intimates this is a condensed summary of the causes, symptoms, seat, nature, classification, and treatment of disease, with a glossary explanatory of the terms employed. Its object is to thus present a general outline of the fundamental principles and facts concerned in the theory and practice of medicine. It affords an excellent epitome of these, and will prove a valuable aid to those engaged in their study, inasmuch as its arrangement and contents are such as cannot fail to greatly facilitate the acquisition of a knowledge of the important subjects of which it treats. Though especially designed for students, it will also prove useful as a remembrancer, if not, to some extent, as a mentor, to those somewhat advanced in the knowledge of the science and art of medicine.

Year-Book of American Contributions to Medical Science and Literature. By O. C. Gibbs, M.D., Frewsburg, Chautauque Co., N. Y. This gentleman, who has acquired quite a reputation for the excellence of his periscope of medical intelligence in the Amer. Med. Monthly, proposes to issue early in the coming year, a work containing a general summary of all the most valuable matter upon medical topics issued during the present year. The plan of the work is as follows: "It is designed that Part *First* of each volume shall comprise an arranged and classified *Summary* of, and index to, all the important original papers found in the various *Medical Journals* of this country, for the year immediately preceding. Part *Second* will comprise a *Summary* of, and index to, all papers found in the published transactions of the National and the various State Medical Societies. Part *Third* will embrace *Reviews* of all Medical books of American authorship, published during the year, with a *Summary* of all the novelties in opinion or practice therein. A copious index will complete the work. To the above plan and arrangement such other additions shall be made as time and circumstances may suggest. The first volume will be issued early in the year 1861." For the purpose of making it as complete as possible, the author desires copies of all published papers or books on medical subjects, and will be happy to reciprocate by an exchange of publications. He says "the work shall contain from 500 to 800 pages, to be substantially bound, and furnished at the very low price of *Three Dollars.* That we may know whether the work is to receive sufficient encouragement to justify its completion, *we request that subscribers' names* MAY BE SENT IN IMMEDIATELY. Payment to be made only on publication." This enterprise is worthy of all commendation, and should be liberally encouraged.

Researches on Primary Pathology and the Origin and Laws of Epidemics. By M. L. Knapp, M.D., late Professor of Materia Medica, and President of the College of Physicians and Surgeons of the University of Iowa, etc. etc. etc. Second edition, enlarged, two vols. in one, pp. 680. Philadelphia: published by the author, 1860.

Some time since we announced the intended publication of this work, and commended it in general terms without designing thereby to assent to all the doctrines inculcated therein. As, however, we have neither the time nor space at present, to enter into an extended review of these doctrines, we shall not attempt to do more than merely glance at some of the main propositions advanced. The principal of these are that disease in general is an unit, and the result of defective, perverted, or impaired nutrition, which is manifested in the form of a primitive dyscrasy, synonymous or identical with the scorbutic diathesis.

With respect to the first proposition on *the unity of disease*, it may be admitted as probable that all the various forms of disease are but modifications of one primitive or general state, just as it is recognized that all life itself is an unit, inasmuch as it is but the aggregation of the different forms and forces concerned therein, yet variously manifested and individually incorporated in nature. While, however, we thus recognize the general unity of life, we also appreciate the different varieties of animated beings and the natural divisions thereof into distinct classes, orders, genera, species, varieties, groups or families, and individuals. Thus in like manner, disease in general may be regarded as an unit, though variously diversified and manifested, its different forms being but modifications or individualizations of parts of the general condition.

With regard to the second proposition, that *all disease is but a result of impaired nutrition*, it is more than doubtful whether any such hypothesis can be sustained. For, while it is obvious that much disease is thus engendered, it is well known that notwithstanding the due supply of all the constituent elements of the organism in the form best adapted for appropriation and organization, in the absence of a peculiar influence requisite to transform and organize it, no nutrition or development will take place. Hence, there is something more required than the presence of the material elements to build up and keep in repair a living organism—matter itself being inert, and generation never spontaneous. This something is a peculiar influence termed force—*force being*—as we understand it—*that influence which causes action.* Though by many regarded as a property of matter, it is more probable that force is distinct from, though usually conjoined with matter. Be this as it may, however, observation teaches that there is a peculiar influence operative in the production of organic or life action. This special influence concerned in organization is variously designated vital, organic, or germ force. It is by means of this force that certain material elements are combined to form organic structure and a living being. For life action, therefore, two things are essential, viz.: the existence of matter capable of undergoing organic transformation, and of a force compelling this action of organization. Thus by the operation of the latter upon the former, or the combination of both, organic action results and living forms are evolved in accordance with the general laws of organization and the special type of development. This mutual relation of force and matter is evident from the fact that no inorganic or organic action takes place in the absence of either one or the other. A few examples may render this more manifest. Thus, for instance, in the case of organization, no production of a germ, evolution of blastema or form, process of nutrition, or development of an organism does take place in the absence of either the material elements or germ force. This is exemplified in the frequent failure of procreation, as well as in starvation and disease. It is strikingly exhibited in consumption and other forms of atrophy as well as in inanition generally, wherein the vital force is so deficient as to render the proper transformation and assimilation of the alimentary matter entirely inefficient for the wants of the economy, and in consequence, the nutritive equilibrium is lost, waste becomes disproportionate, disintegration excessive, and death necessarily ensues. Again, in the more purely adynamic conditions, instead of the gradual destruction of life by this modification of nutrition, death often takes place speedily by the apparent withdrawal of the force necessary to support life. The existence of such a force, and the powerful influence which it exerts in the production and support of life, is made still more manifest in the case of the dead body, which, though it may be perfect, so far as the structure is concerned, may, nevertheless, be surcharged with nutritive matter in its most appropriate state for organic transformation, and yet in the absence of this peculiar vital influence, no such metamorphosis will take place, neither will assimilation, organization, nor any other living action result. Hence, as in the normal operations of the living economy we have the two distinct entities of matter and force, each one of which is essential to the perfection of the processes of organization and to the existence and development of the organism, so likewise in the abnormal aberrations of these processes and life action generally, there are the same distinct agencies concerned. Recognizing, therefore, the existence of both matter and force, and their mutual relation to life, the physiological and pathological phenomena may be classified as organic and dynamic. The first dealing with the materials and structure of which the organism is composed; the second, with the force connected with the origin, development, functions, and preservation of that organism.

Respecting the claims of the third proposition for *the existence of a primitive scorbutic diathesis underlying all disease*, it seems scarcely necessary to go into an examination, inasmuch as, in either event of the recognition of the special signification of the term scorbutus, to which it has been hitherto limited, or the general application to all impaired nutrition as here given to it, the preceding observations will, it is believed, be sufficient to show its fallacy.

While we have thus been obliged to take exception to the general doctrines of this work, we do not intend thereby to disapprove of all that is taught therein, inasmuch as it contains much useful information upon some of the fundamental principles of medical science which have hitherto been greatly neglected. In urging, therefore, so strongly as it does, the necessity of a proper quality as well as quantity of the materia alimentaria for the preservation of the normal status, and pointing out so prominently the relation of nutrition to health and disease, it will prove of essential service in disseminating more correct views upon therapeutics as well as hygiene. It is, however, but common justice to say, that these principles relating to the due supply of the different constituent elements of the organism in order to maintain as well as restore, when lost, the equilibrium of nutrition and health, have long been taught by Prof. Samuel Jackson in his philosophic lectures on the Institutes of Medicine, in the University of Pennsylvania, in this city, as those who have had the privilege of listening to his prelections can testify. So far as we are aware, however, he has never attempted to give them the wide application of the author before us, in asserting that all disease is a result of impaired nutrition, and can only be prevented or removed by a course of living or treatment in accordance therewith. As an exponent, therefore, of the principles of the origin of disease from a deficiency of the necessary organic elements and impaired nutrition, this work of Dr. Knapp is worthy of all commendation, and should be read by all engaged in the culture or practice of medicine. Besides other pertinent matter, it contains an article of more particular interest to the dentist, "On Dental Hygiene, or, the Causes of the Early Decay of the Teeth, and the Rational Means of Prevention," in which the author treats of the importance of proper alimentation to the healthy development, nutrition, and preservation of those important organs.

THE

DENTAL COSMOS.

NEW SERIES.

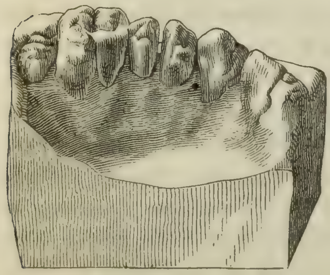
VOL. II. PHILADELPHIA, DECEMBER, 1860. No. 5.

ORIGINAL COMMUNICATIONS.

PRACTICAL HINTS.

BY J. D. WHITE.

Filing teeth, preparatory to plugging, is a subject which requires more experience than any other connected with our art. At first view it would seem that a rule could be laid down, that the meanest tyro in the art could adopt and apply as successfully as an older practitioner, who had made it a protracted study, and observed the ultimate success or failure of many cases. The success of to-day is not always the success of the future, and it applies well in many of our operations in dentistry. There is not enough attention paid to this; note should be taken of special cases, and they should be watched carefully for a long time, in order to determine the final results. It is a very difficult matter to decide how much a tooth should be filed during the operation of plugging; to leave the case in the best condition for the future benefit of the patient, it is as important that a tooth should be so filed as to enable the patient to take proper care of it after it is plugged, as to place it in the best state of preservation and usefulness. But teeth change so much in their position, after they are filed, that it is impossible to foresee what will be the end of every case. A good rule, however, should be adopted, and if unexpected changes take place, the operator is not to blame. It would be a very desirable thing if teeth would remain as we leave them; but it is bad practice to prepare them in such a way as to be immediately a source of annoyance to the patient; still, in many cases, this can scarcely be avoided. It is bad practice to file a tooth so that the bone is exposed around the plug, after the operation is over, because it not only favors future decay, but, if the bone be sensitive, it is a source of constant trouble. We see those cases daily. It is bad practice to file so as to leave the surfaces of teeth parallel to each other, as it favors the retention of substances between them; favors decay, and renders them uncomfortable. It is never advisable, except in some rare cases, to *nick* the teeth in filing; although in cases where the teeth are very narrow at the necks and wide at the crowns, and the cavities low down, we believe it would be the best practice, and depend upon the patient to keep them well cleaned after plugging. We saw a set of back teeth of this description, which had been literally ruined by an inexperienced operator. The cavities of decay were low down, near the necks of the teeth; they were filed through from the crowns, to get to the cavities, for plugging; a great deal of the substance of the teeth was sacrificed in this way; they fell together, as the bone of the socket was light and spongy. On this account, a considerable surface came in contact; the bone of the teeth was left exposed around the plugs; it became sensitive, the teeth decayed, and is a source of constant trouble. It is not good practice to file teeth so much as to present a row of *saw-teeth*, because their use, in masticating, is destroyed. We are aware that it is a difficult matter to keep, at all times, the proper mean between extremes. It is not our intention to go into detail in every case, but to give a few hints, and refer more especially to filing the superior bicuspids. The accompanying cut will, perhaps, illustrate what we mean in preparing bicuspids. These teeth had been plugged before; they had been filed slightly, and the crowns cut out between the cusps; they fell together, so as to touch firmly on the palatine and buccal margins, leaving a half-round hole in the centre between them. This hole filled with food in chewing, and caused a great deal of trouble to get it removed. Sometimes the gum would swell opposite the necks of the teeth, and pieces of food would escape at those points. We cut away the palatine margins, so as to make a V-shaped separation between the teeth, with its base toward the palate. The shape of the teeth on the buccal margins was not changed, so that the filing did not spoil their appearance. As a general rule, the palatine and lingual margins ought to be cut away more than the buccal. We made a set of plaster models to show what we regarded as the proper method of preparing all the teeth for plugging, when we had the honor of filling the Chair of Operative Dentistry in the Dental College, which all can see, if they give themselves the trouble to call on us. While we do not wish to be understood as proposing what is infallible, but we regard it as a good system.



(To be continued.)

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TREATISE UPON THE GENESIS AND DEVELOPMENT OF THE DENTAL FOLLICLES TO THE EPOCH OF THE ERUPTION OF THE TEETH.

BY DRS. CH. ROBIN AND E. MAGITOT.

[Translated for the Dental Cosmos, from the "*Journal de la Physiologie de l'Homme et des Animaux*," Dr. E. Brown-Séquard, editor, by E. Sureau.]

§ 3. *Constitution of the jaws at the time of the appearance of the dental follicles.*—The first dental bulbs appear in the human species in the lower jaw from the fifty-sixth to the sixtieth day, and in the upper one about the sixty-fifth day after conception; that is to say, after the formation of the buccal cavity is completed by the union of the incisives at the mesial line and the partition of the nose behind the dental arch. The various tissues constituting that jaw can then be easily distinguished from each other: first, the maxillary; second, the mucous membrane covered with its epithelium; third, the submucous tissue, which does not differ from the submucous tissue of the neighboring parts in regard to its anatomic composition and its texture, but penetrates into the groove of the upper and lower maxillaries. It is in the thick part of this that the follicles originate.

We will consider succinctly these three parts, observing them during the earlier periods of the fœtal age, because the phenomena of dentition are more or less directly influenced by them.

I. The Maxillaries.

When the first dental follicles appear, the ossification of the cartilage by which the jaws originate is already much advanced throughout the whole extent of the dental portion—the only part that it is essential for us to consider in this place. The ossification is, however, not complete, especially in the anterior portion, and particularly in the ruminating animals.

The substitution of bone for cartilage being once effected, the growth of the maxillaries continues by the method of ossification called invasion; that is to say, in the same proportion as the cartilaginous substance is developed at their surface, invading the surrounding submucous tissue, it is itself conquered by ossification.

Under the microscope, at a slight increase, the bone of the maxillary, and particularly that of the inferior, is easily distinguished from other tissues by its dark color and the breadth of the osteoplasts, which appear in the form of small, blackish, star-studded points. If an entire lamina of the jaw is examined, we will see only a solid, dark tissue, slightly areolar at its edges; whereas when we examine a cut at its surface, we find the osseous substance divided into follicules that circumscribe the areolæ, forming most elegant designs. Respecting the cartilaginous tissue, (which forms, as before stated, a sort of varnish, by means of the ossification by invasion, on the surface of parts already ossified,) it appears in the form of a transparent bed, which it is difficult to distinguish from the surrounding laminated tissue when it is but slightly magnified. The chondroplasts which it contains, when seen under a magnifying power of about three hundred diameters, are pale and triangular, or irregularly polyhedral in shape. In the small cartilaginous lamina that rises above the osseous edges of the grooves, and in the cartilage of the extremities of the organ, the chondroplasts are larger, angular, with the angles sometimes prolonged to a point, and contain one or two finely granulated grayish cells. The chondroplasts give this cartilage the general appearance of the cartilage of ossification in the other parts of the fœtal skeleton, as it is seen when the phenomena of ossification is already considerably advanced after birth.

The preceding particularities of texture exist without sensible differences in all the mammifera.

It is now necessary for us to make a separate examination into the disposition of the inferior and superior maxillaries.

a. Inferior maxillary.

At a period which corresponds in man to the end of the second month, (between fifty and sixty days,) there is no part of the inferior maxillary entirely cartilaginous except the condyle, the posterior part of the angle, and the crown of the coronoid apophysis. All the rest of the organ is ossified, but covered with a cartilaginous bed, only some hundredths of a millimetre in thickness; it is a little thicker at the edges of the bone than it is on its faces. The same condition of things occurs in the hog, but we have already stated that among ruminating animals the ossification of the extremities and edges of this maxillary are less advanced. The lower edge of the latter is thin and regular. The upper edge of the horizontal or dental portion is furrowed with grooves; thus it is really double, and each of the edges of the groove is thin and easily broken. The lower maxillary is at this level almost as broad as it is high; but following its internal structure, it does not offer the resistance that its thickness would seem to indicate.

The groove is worthy of being described with care. It extends without discontinuity from the anterior edge of the ascending branch of the maxillary, encroaching a little on its inner face, as far as the anterior extremity of the corresponding branch of the maxillary; consequently the whole of its contents can be removed in one piece. Yet almost directly after the appearance of the bulbs this continuity is broken between the molars, canines, and incisors at the level of the *bar* in all the mammifera that have one. The bone is contracted at this level, and is lower than behind and in front, (pl. 2, fig. 6.) The depth of the groove is considerable; and from the time that the bulbs appear it occupies more than two-thirds of the height of the bone, the lower edge of which is thin and regular in comparison with the rest of the organ. In man, however, toward the beginning of the fourth month, the solid part of the maxillary becomes gradually higher than the groove is deep, reckoning from the level of the canine as far as the symphysis.

At the level of the molars, and in relation to the axis of the lower maxillary, the groove is situated inside of the latter, but passes round it in order to be continued on the side of the outer face in the whole portion containing the follicles of the canine and the incisors. The groove is widened, as if swollen in blisters about its posterior third, narrow in front, and more suddenly contracted behind. It opens at the inner face of the ascending branch of the maxillary by a fissure-shaped opening, broadened and rounded at the level of the bottom of the groove, and narrow above, where it soon closes; there then remains only the lower part of that slit, which forms the *posterior dental foramen*, or posterior orifice of the dental canal, which is traversed by the vessels and nerves of the same name. They make part of the contents of the groove, to which we will return later.

The above-mentioned vessels and nerves creep in a slight furrow at the bottom of the groove; this furrow is always smooth and regular, and will become, at a later period, the dental canal. From the time of the genesis of the follicles, the inner face of the laminæ or ledges of the maxillary, which limit the sides of the groove, become thicker from space to space in the shape of little vertical projections that stand facing each other on each side. These projections press forward, join each other, and form complete partitions, dividing the groove into cells or alveoli; but this takes place only at a much more advanced period of development in man; as late as the ninth month of gestation and even later, we can raise in one piece the contents of the groove, containing all the follicles in it.*

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* If we except some lines of Hunter (1771) upon the subject with which we are occupied, we have not been able to find a description of the inferior maxillary groove where the dental follicles originate. Meckel merely says that, "at the beginning, the inferior maxillary is not yet closed at its upper part and makes part of the space limited by the two dental edges." (Meckel's Manual of Anatomy.) M. Cruveilhier says: "That from the fiftieth to the sixtieth day, each half of the bone is already furrowed by a groove common at that time to the dental canal and the alveoli; at a later period, the groove becomes very considerable, and is divided into alveoli by partitions, which are incomplete at first, but afterwards complete; these

When these partitions are produced, the vessels and nerves pass below them, at the bottom of the groove, without discontinuity, as in a canal under as many bridges represented by the partitions, and soon occupy, as we will see, a true sub-alveolar (inferior dental) conduit.

The rudiments of the partitions always unite, in the first place, between the first molar and the canine, and then, between the latter and the second incisor. From the middle or end of the fourth month the first of these partitions already exists in the shape of a narrow, slender, and thin follicule, passing over the vessels at the bottom of the groove. At this period the prolongations are not yet united between the canine and the second incisor, but they become so near the sixth month. They unite between the two incisors near the seventh month, but not between the molars until after birth. Before they are united throughout their whole height, they form a very slender bridge immediately above the vessels. This bridge grows in height by thin, sharp, prolongations, that proceed from the walls of the groove toward its middle, and complete the partition after birth.

In some of the mammifera, the hog for instance, these osseous partitions unite between the incisors and the canines a little after the occlusion of the follicular wall, under the form of a sack, considerably before the union of the corresponding partitions takes place between the molars. These partitions are formed according to the method of ossification called *invasion;* that is to say, by the production of a thin and narrow cartilaginous projection, which ossifies almost as soon as it is formed; so that the two parts appear opposite each other on the corresponding faces of the walls of the groove, presenting a thin cartilaginous varnish on their surface in train for ossification by production. But as they are only produced after the follicles have appeared and have become considerably developed, we need not devote any more space to this subject at present, since at the time of which we are speaking (from the fifty-fifth to the sixty-fifth day of the human fœtus) they are not yet in existence.*

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alveoli and their partitions occupy the whole height of the body of the bone." In the second or third month we find that the jaws "are furrowed by a broad and deep groove, divided by very thin walls into as many distinct cells or alveoli as there should be dental germs." (Anatomic Descriptive, Paris, 1843, vol. i. pp. 185 and 590.)

* The manner of production of the partitions which change the middle and upper part of the dental groove into the condition of alveoli, and the bottom into an osseous canal for the vessels and nerves, has been generally passed over or badly explained This will be shown in the following quotations (what has been said by Hunter will be pointed out hereafter.) "The fibrous laminæ, which separate the follicles during the first months, become ossified." (Oudet, Art Dent., Dict. de Med., 2d. ed., Paris, 1835, vol. x. p. 105) "The follicles are at first crowded against each other, immediately above the trunks of the alveolar vessels and of the nerve, separated only by a soft substance which draws out in threads between the fingers. Near the middle of the embryonic life, the walls which separate them, and which in

The two laminæ of the lower maxillary, which confine the dental groove, and from which the partitions spring, are thin, flexible, and easily detached by rupture along the side that is in continuity with the rest of the bone near the bottom of the groove. The outer face of both of the laminæ is convex—that of the inner plate is swollen at the level of the molars, and projects at that place above the lower part of the bone. The outer face of the external lamina is especially convex at the level of the canines and incisors. It follows from this arrangement that the body of the maxillary is swollen as if it were bloated. At the back the inner plate exhibits a swelling much more marked than the other; it advances upon the corresponding face of the ascending branch, from which it is at first separated by a fissure, in a fashion that presents a protuberance which is a sort of apophysis, and which unites afterwards with the inner face of that branch. It is originally developed upon the body or lower edge of the bone while raising itself above it; it bears the shape of a lengthened, projecting, laminated apophysis, and is prolonged into a point at the side of the ascending branch, as we will see hereafter. The anterior extremities of the bone, at the symphysis, are at this age rather irregular in the already ossified part; this part is covered with a thin bed or cartilaginous varnish. They adhere by this medium to the two lateral faces of the uneven or common middle part of *Meckel's cartilage;** this adherence is so slight that they can be separated from it without breaking it, notwithstanding its great fragility at this period.

The connection between *Meckel's cartilage* and the lower jaw is sufficiently intimate at this time, to make it necessary for us to devote some of

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lining the bottom become firmer and stronger, are ossified little by little, and at length constitute the alveoli. Ossification begins at the bottom, after which it gains the partition, from the bottom as far as the alveolar ledge." (Henle, General Anatomy.) We have seen that this is not the only way by which these walls are formed. None of the authors insists upon the fact that the follicles originate near the vessels, at the bottom of the groove, and consequently in that part which afterwards becomes the dental canal. We will see, in addition to this, that the inner face of the groove has not at this time any distinct periosteum of the tissue incasing it, and that the osseous substance is found there in direct contact with the latter.

* This organ is also called *Meckel's prolongation*, from the name of the author, who was the first to recognize its existence. (Meckel's Manual of Anatomy.) Meckel has observed that birds, reptiles, and fish have a cartilage exactly similar, extending from the posterior piece of the jaw to the anterior. This cartilage originates before the inferior maxillary, and in the beginning forms essentially the skeleton of the first visceral arch. Richard Owen, in his remarkable Principles of Comparative Osteology, has clearly stated that "the malleus is a modified element of the tympano-mandibular arch in the batrachia and fish," as it represents the bone called by him the *mesotympanic*, and by other anatomists called *symplectic.* He considers the cartilage of Meckel in the mammiferæ an extension of the thin apophysis of the malleus.

our space to the consideration of an organ that has been too much neglected by many anatomists. It is the more important from the fact that in some animals, as the hog, it has at first a connection with the inner part of the dental groove which contains the follicles of the lower incisors.

Meckel's cartilage is developed in the first branchial or visceral arch, as has been stated, previous to the inferior maxillary. The latter has its origin on the outer side of the former, near the middle, and adheres to it by simple contiguity. The cartilage is longer but thinner than the maxillary, and spreads from the median line, where it is in continuity of substance with its congener on the opposite side, as far as the base of the cranium, at the level of the middle cell at the place that will be occupied by the middle ear. Here it passes between the petrous portion of the temporal and the tympanic ring or frame. It is cylindroidal through most of its length, and is only about two-hundredths of an inch in height upon a thickness a little less. It, however, offers sufficient resistance, and is easily dissected.

Before passing under the tympanic frame it becomes bifurcated, and the malleus is developed at the expense of the upper branch, which remains for a long time in continuity of substance with the latter. The lower branch is inserted at the neck of the malleus, forming a connection at its cartilaginous extremity by a little ligament; ossification changes it at a later period into Raw's slender anterior apophysis, or Folius's process, (pl. 2, fig. 6, *j*, *k*.) When the cartilage of the malleus is once developed and the preceding connections established, Meckel's cartilage exhibits throughout its whole extent the following characteristics:—*

It is a single symmetrical organ which spreads against the inner face of the jaw and beyond it, from the mesial line to the drum of the tympanum. Its general form is a little like that of the adult osseous lower jaw; that is to say, an ogive at the anterior summit, and more or less tapering. The size of this organ varies according to the species of animal and the age.†

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* Meckel had seen only one of the branches of the cartilage—the one inserted at the head of the malleus, and he points it out as placed above the slender anterior apophysis. "We can at most admit," says Meckel, "that the latter is at first part of it, and that it is separated from it very early."

† That which precedes as well as that which follows is propounded according to the pieces resulting from our dissections of the human fœtus and those of other mammiferæ, and differs in some respects from the descriptions given by the numerous authors, who have verified Meckel's discovery. Among others, Reichert has most closely studied the evolution of *Meckel's cartilage*, and according to him the *incus* originates at the expense of one of the branches of Meckel's cartilage. (Reichert, *Uber die Visceralbogen der Wirbelthiere im Allgemeinen und deren Methamorphosen bei den Vœgeln und Sœugethieren.—Archiv für Anat. und Physiol.*, von J.

The anterior extremity of this organ is placed between the corresponding ends of the two halves of the inferior maxillary—it is thin and a little enlarged vertically. There is no discontinuity or division of substance into two contiguous halves at the median line. But it is separated, by bifurcation, into two cartilaginous fasciæ, adhering immediately to the inner face of each of the horizontal portions of the corresponding maxillaries. Each branch is flattened at first, and a little widened like a spatula; and they adhere to that part of the inner plate of the maxillary which bounds the groove of the incisors. They assume a rounded form near the level of the canine, where they are a little above the bottom of the groove, being nearer to the lower edge than to the inner upper edge of the bone. Each branch is partially inclosed in a small, regular furrow of the maxillary, below the projection of the inner plate of the groove of the follicles and vessels, (pl. 2, fig. 6, *g*, 1.) The cartilage has no relations of contiguity with these last organs that are contained in the bottom of the groove, and is separated from it by the inner plate of the groove; then beyond, near the ascending branch of the maxillary, it passes below the dental nerves and vessels, bending a little toward the top. It extends beyond the upper edge of the ascending branch, which it crosses near the middle of its height. At one or two millimetres (*millimetre* 0·03937 *inch*) behind this branch each congener half of the cartilage is divided in its turn into two subdivisions—the upper one, being slightly bent, reaches the head of the malleus and unites with it; the other, only half as long, ceases to be cartilaginous before it reaches the level of the tympanic frame, and continues by a grayish, fibrous ligament, which is more slender than itself, and is inserted in the neck of the malleus at the place afterwards occupied by the slender apophysis of Raw or Folius, (pl. 2, fig. 6, *l*.)

The crest, myloidian, or inner oblique line of the lower maxillary, is already developed and even very protuberant near the fourth month, at the time that *Meckel's cartilage* is still easily dissected and detached below it. The furrow of the mylo-hyoidian nerve nearly corresponds to the upper edge of Meckel's cartilage, near the posterior orifice of the dental canal.

All authors agree in saying that *Meckel's cartilage* is gradually atrophied before the eighth month, starting from the jaw near the ear, without ossifying, or forming a point of special ossification for the lower maxillary. We have not met it after the seventh month of gestation.*

Mueller, Berlin, 1837, 8vo., pp. 120.) We have not been able to see this communication, which may perhaps refer to the already rather advanced age of the embryos that we have dissected.

* In 1815 Spix described and represented the plate, which forms the inner alveolar ledge, as the point of ossification peculiar to the lower maxillary. According to him it remains distinct and separate until the fourth month of the intra-uterine

Nevertheless its middle part seems to continue to assist at the formation of the maxillary symphysis before its ossification.

b. The Superior Maxillary.

Until near birth the upper maxillary preserves the form of a bent osseous band or thin plate, of less height than length, so that the globe of the eye which supports it seems to rest, and does really rest, upon the upper floor of the mouth, (pl. 2, fig. 6, *a*, *e*, *f*, and fig. 7.) This peculiarity exists in the embryos of all the mammiferæ, excepting the differences in the shape and size of the maxillary.

At the outer edge of this bone, before it has become very thick, (about the fifty-fifth day in man,) there appears a thin external crest, and another internal one—these limit a groove which is shallow at first, and has rather more the appearance of a furrow. A similar peculiarity is observed shortly afterwards upon the inter-maxillary. It is the production of these crests, or osseous lips, which gives the anterior edge of the bone that thickness which it has not yet acquired.

From the time that these crests appear, a small filament can be seen at

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life; a line of demarkation continues between this plate and the rest of the inferior maxillary. (*Spix*, *Cephalogenesis, sive capitis ossis structura, formatio et significatio per omnes animalium classes, familias, genera ac ætates digesta atque tabulis illustrata, legesque simul psychologiæ, cranios capiæ ac physiognomiæ inde derivatæ.—Monachii*, 1815, and not 1825, as is stated by various German authors; folio, pp. 20.) Meckel justly remarks that the internal alveolar edge of the lower jaw is developed under the form of an apophysis projecting behind, in relation to the rest of the bone, with which it makes part in front; it is at first separated from it by a fissure behind, without any cartilage to close it. But when in the progress of development this kind of apophysis has reached the ascending branch, it unites in the form of a bridge with the inner face of the latter, which gives birth to the maxillary foramen, without there being any special osseous nuclei for this edge of the maxillary. Meckel adds that in the beginning the maxillary canal is not yet closed in its upper part, and is confounded with the space limited by the two dental edges. (Meckel, *Manual of Anatomy*.) It is evident from the preceding that Spix is not speaking of *Meckel's cartilage*, and that he has never seen it; for this organ has no point of connection with the alveolar ledge. M. Cruveilhier has described "upon the fœtus from fifty to sixty days, a kind of needle running along the inner face of the body and branch of the bone; this needle is completely free on one-half of the maxillary, adhering to the other half through the inner third of its length." M. Cruveilhier adds that the spine which crowns the orifice of the dental canal is no other than the inner extremity of this osseous needle, which will form the inner edge of the dental canal rather than the inner alveolar ledge as according to Spix. M. Cruveilhier calls this osseous plate *Spix's needle*, *the point of ossification*, and *the osseous point of the dental canal.*—(Anatomie Descriptive, Paris, 1843, second edition, 8vo., vol. ii. pp. 184 and 185.) It is easy to see, after what has been said, that *Meckel's cartilage* is not the question here—it is nothing else than the inner plate of the groove which contains the follicles and vessels: it is developed in the manner indicated by Meckel, but does not form a point of special ossification.

the bottom of the furrow in its two posterior thirds—this filament is formed of vessels and nerves the nature of which can be learned by the use of the microscope. From this period we can ascertain that which the rest of the evolution shows still better—that the suborbital nerves and vessels are there, and that the external lip of the dental groove passes above them, near its anterior extremity, in order to allow them to reach under the skin. This groove is thus produced immediately below the eye—a place occupied at that time by the edge of the upper maxillary, and which the nerves and vessels continue to occupy. The same thing occurs in the lower maxillary, where the groove appears before that of the other jaw—the groove of the upper maxillary is common to the follicles, which are about to appear, and to the vessels which remain sub-orbital. It is the bottom of this groove which, by consequence of the phases of development, becomes the sub-orbital canal just as in the opposite bone it becomes the dental canal; but this phenomenon occurs very much sooner in the superior than in the inferior maxillary. Nevertheless it is at the bottom of this groove, against the sub-orbital nerves and vessels, and consequently in the part which afterwards becomes the sub-orbital canal, that the follicles also originate. Those of the molars are, however, the only ones that originate here, for the canal belongs only to the maxillary and not to the incisive bone, and because it is already separated from the groove in front when the follicle of the canine makes its appearance. Once produced, the upper maxillary groove exhibits the following characteristics:—

From the third month, its posterior half, which was confounded with the sub-orbital canal, becomes closed and separates the follicles placed at the level of the vessels and nerves.

The external and internal plates which confine it are thin, fragile, sharp at the free edge, and a little undulated. The groove is as it were slightly varicose, because the plates sink a little at the level of the interval of the follicles from the time of the appearance of the latter. Near the commencement of the fourth month, the rudiments of the alveolar partitions are formed at this level, as they are in the lower jaw; but they are produced at the same time at the bottom and upon the sides of the groove, in the shape of thin, semicircular, sharp-edged projections. After the seventh month they reach, in height, nearly but not quite to the level of the edges of the groove between the first molar and the canine, as well as between the incisors—the rest of the groove remains undivided and common to the two molars. At this period the nerve and suborbital vessels, which start at first at the level of the line of contact between the canine and the second incisor, show their orifice of egress at the level of the rudimental partition interposed between the first molar and the canine. That part of the upper maxillary which separates the canal of the bottom from the follicles is, at this time, only in the condition of a thin, osseous plate, not thicker at most than from a quarter to a half millimetre, and perforated by one or two very small orifices intended for the passage of the vessels destined for these organs. The suborbital vessels and nerves still describe a slightly concave curve, like the canal, below the occular globe. The communication of the groove of the follicles with the sub orbital canal at the level of the molars, from the time of the origin of the follicle of these teeth and their continuance in the neighborhood, until the period when their removal is induced by the development of the Hygmore sinus, are facts important to the determination of the nature of this canal, the method of its formation, and its analogies with the inferior dental canal.*

The follicles, which are placed at the level of the grooves, originate therefore in that which is called the inferior dental canal and in the suborbital canal, both canals being at that time in the form of grooves. It is only in consequence of the development of the follicles and of the maxillary bone that the groove becomes isolated and closed at the bottom so as to constitute a conduit, from which the crowns of the teeth depart more and more.

(To be continued.)

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DOES TOBACCO INJURE THE TEETH?

BY CHAS. WOODNUTT, D.D.S.

This is a question affecting a large class in the community, and we, as dentists, are often asked the question, "Does tobacco injure the teeth?" We should, therefore, be capable of giving an answer, either for or against its use, as the case may be. There are some, I know, who have such an antipathy to tobacco—such a holy horror of the vegetable—as to consider everything injured by it with which it comes in contact. I must acknowledge, I cannot share this feeling, as this is being written with the smoke of a good cigar gracefully curling around my head. Still, if it can result injuriously to the teeth, in any way, I wish to know it for the benefit of my patients. It can only affect these organs *directly*, in three ways, which I will examine in the following order: First, by taking the hot smoke into the mouth, and from the sudden change of temperature, cracking the enamel, an objection which I have heard frequently, but which can be easily disposed of. Second, the gradual destruction of the teeth, by wearing away the crowns, in their almost constant use in chewing tobacco. Third, by the action of the oil of tobacco, or empyreumatic oil, upon them. The first of these objections I have proved to be groundless, and so can any one, by reducing a tooth to the temperature of ice water, and passing it instantly into boiling water.

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* The signification of these facts, which are observed in all the mammiferæ, seems to have escaped the anatomists and physiologists. M. Cruveilhier is the only one who has made any mention of the removal of the teeth and of the orbit at the time of birth. He says: "At birth, the alveolar range is almost contiguous to the floor of the orbit."—(*Anat. Descriptive*, Paris, 1843, second edition, vol. i. p. 167.)

I have not been able to detect any change in a tooth subjected to this treatment, a change much greater than it ever undergoes in the mouth.

But suppose this change of temperature would crack the enamel, tobacco smoke would not do it, for it never gets much warmer than the breath, and consequently than the teeth themselves. Smoke never feels hot in the mouth, therefore it can not be so injurious as tea or coffee, or a hundred other articles of food that are in constant use.

As regards the second objection, the wearing away of the crowns, there is more in it; no doubt but the constant attrition does cut them down somewhat; but would not the constant mastication of roast beef, licorice root, or anything else, be followed by the same results? I think so.

As to the action of the oil of tobacco on the teeth *directly*, I have just proved to my satisfaction that it amounts to just nothing at all.

Having procured some of the oil, (made by the destructive distillation of tobacco,) I cleaned and thoroughly examined a tooth, then immersed it in the oil, where it remained for twenty-four hours. Upon taking it out, at the expiration of that time, there was not the slightest change perceptible. It was reimmersed and left twenty-four hours longer, then taken out and examined again very carefully, but with precisely similar results. It was then left a month in the oil without being affected, except that it was discolored from having absorbed some of the oil.

I have made no experiments with the infusion, not deeming it necessary, as the teeth of tobacco chewers are constantly bathed in it, and without any direct injury that I have ever been able to discover.

Tobacco may be, and undoubtedly is, injurious to the nervous system, when used in large quantities. But can it injure the teeth through the nervous system? When it is smoked as it is by the Spaniards—all the smoke being taken into the lungs—it is difficult to understand how they can escape being injured by it, particularly if they smoke much. But the way it is smoked in this country, by simply taking the smoke into the mouth and blowing it out again, there can be no harm, especially if a mereschaum is used. The clay absorbs the oil from the smoke to such an extent that very little of it gets into the mouth—just sufficient to induce a feeling of calmness and repose, which is delicious to those accustomed to it.

The most serious objection that can be advanced to chewing tobacco, is its extreme filthiness, an objection which should be sufficient to prevent its use in that way among dentists. The next is the drain upon the salivary glands; but among old chewers this is so slight as to be of no practical moment; they expectorate but little, and old smokers not at all.

In neither case does a sufficient quantity of the oil get into the mouth to cause any serious derangement of the mucous surfaces, much less of the teeth themselves. It is true, there are cases reported of cancer of the tongue and lips, said to be caused by pipe smoking; but does this not rather arise from the mechanical irritation of the *pipe stem*, rubbing against those parts, than from the tobacco itself? We sometimes have encysted tumors, caused by jagged and broken teeth, irritating the tongue or cheek. I do not wish to be considered an advocate for the use of tobacco, neither do I condemn it, for to me it seems to have supplied a want—a *necessity*, if you choose—in the human economy, else why would its use have become so universal?

It has prevailed against the direst opposition; against laws, taxation, and duties to suppress it, even as truth is said to prevail. Still I would not have dentists use it, except at such times as to allow the evidences of it to dissipate themselves, before coming in contact with their patients.

The fumes of tobacco are unpleasant to most ladies, a class with whom we have more to do than any other. That alone should be a sufficient reason for not using it. Their engagements with us are of a sufficiently unpleasant nature. We should, therefore, endeavor to make all our surroundings as pleasant and agreeable as possible, for two reasons—the first, and by far the most worthy of consideration, is their comfort; the second, is for our own pecuniary advantage.

PROTEST AGAINST DENTAL EXHIBITIONS.

BY C. BREWSTER, D.D.S.

INCLOSED I send you a Protest against Dental Exhibitions, in the form of a petition to the Committees of Public Exhibitions, to refuse the bestowal of prizes on any such objects. Will you authorize me to affix your name to it? If so, please sign the accompanying copy. The dentists in this city have unanimously agreed to sign it. I have sent a similar copy to every dentist in Upper and Lower Canada (whose name I could procure.)

My project is to get every dentist in the two Provinces to sign the paper sent to him, *and return it to me;* whereupon, having collected the signatures of all those favorable to the project, I will then attach all the names that I am thus authorized to use, to fresh copies of the petition, and return one to every signer, retaining the *original* signatures, so that should a committee at any time object to the petition on the ground that it was not the original, the dentist presenting it could procure from me the original if required; to be returned again, however, in case it might in future be again called for by some other committee. Thus two or three, or I hope *all* the dentists in every city, town or village would have in his possession one of these copies. And any one of these dentists presenting his copy to the committee would be sufficient to prevent any future aspirants to the title of "First Prize Dentists" from obtaining their object. And even should there be any hesitation on the part of the committee, all the presenting dentists would have to do would be to call on all the other respectable dentists of his community to support the motion, for it is from among that class that I expect to enroll most of the supporters of this petition; and, sustained by them, it must have a powerful influence on this point with committees of exhibitions.

I would suggest that every dentist do frame his copy, and hang it in his surgery, and it will grace his walls infinitely better than any First Prize Diploma would.

Before concluding, I would inform you that we have succeeded in preventing any prize being given to dentists at the coming exhibition in this city.

Hoping to hear from you as soon as possible,

I remain your most obedient servant.

P. S.—What is your opinion as to incorporating the dentists by act of Parliament, and obliging all those who in future may wish to practice in Canada, to pass a proper examination before a Board of Dentists?

With regard to this, the opinion was unanimously in favor of it.—C. B.

To Committees of Exhibitions.—We, the undersigned dentists of Upper and Lower Canada, wishing to put a stop to the growing evil of exhibitions of specimens of mechanical dentistry, which practice has increased of late years to such an extent as to be now looked upon by the public as a test of superiority, thereby gradually involving many respectable dentists in the same practice, from the sheer necessity of self-protection.

And whereas we look upon the bestowal of prizes for specimens of this work as tending to deceive, and lead the public into the erroneous idea of supposing such dentists to have superior capabilities.

And whereas we, the undersigned, are aware that such specimens do not at all denote any superiority on the part of the exhibiter, as the superior excellence of the dentist does not consist in the mere mechanism of a set of teeth, but in the adaptation of them to the muscles of the mouth, the expression and form of the face, their proper articulation, and the attainment of many other objects, which cannot be properly defined and demonstrated in the show case of the exhibiter.

And whereas we, the undersigned dentists, have come to the determination of endeavoring to prevent all future exhibitions of this kind, we do humbly petition your committee, together with all other committees of exhibitions that in future may be organized, to refuse the bestowal of prizes on dentists for specimens of this work.

Quebec, C. E., R. Ramsay, P. Baillargou, J. M'Kee; Sherbrook, C.

E., A. Gilmore; Melbourne, C. E., W. Beckett; Toronto, C. W., G. L. Elliot, J. W. Elliot, W. Myers, J. W. Slater; Ottawa, C. W., Oliver Martin, F. D. Laughlin; Hamilton, C. W., John Reid; Kingston, C. W., B. W. Day, A. M'Michael, J. T. Clements, L. Clements; London, C. W., A. C. Stone; Belleville, C. W., G. V. N. Relyae; Cobourg, C. W., F. G. Callender; Perth, C. W., G. W. Eberson, A. D. Lalonde; Simcoe, C. W., Charles Rudon; Morrisburg, C. W., R. G. Neagaut; St. Thomas, C. W., H. P. Whipple; Montreal, C. E., Geo. Vanbuskirk, A. Bernard, C. F. Frestler, J. H. Webster, M. Jourdain, H. Ross, J. A. Bazin, C. Brewster.

By their attorney. (Signed) C. Brewster.

I, James Stewart Hunter, a Notary Public, duly commissioned and sworn, residing and practicing in the City of Montreal, do dereby certify that the foregoing is a true copy of the original remaining, of record in my office.

Acte whereof having been requested by the above named Charles Brewster, I have granted the same under my Notarial hand and seal of office. J. S. Hunter, N. P.

Montreal, 20th August, 1860.

We publish the above paper with pleasure, and hope that it may serve the dentists in the States to make an effort in the same direction. It is time that something of the kind was done. We gave our views on the subject of Dental Exhibitions, some time since, in the *Dental News Letter*.

J. D. W.

TEMPORARY TEETH.

BY W. T. DICKSON.

As I live in an isolated part of the country, and have no opportunity to communicate with my professional brethren except by written communication, I propose to state a case of temporary teeth that came under my observation. In the spring of 1856, a young man eighteen years of age, of robust and healthy constitution, applied to me to have a couple of teeth plugged. On examining his teeth, I found that he had not shed his second temporary molars. His teeth were very much crowded, and I insisted on extracting the temporary teeth, giving as a reason, that the over-size of his temporary teeth caused the others to be too much crowded, and also, that he might possibly erupt his permanent teeth. He permitted me to extract one to try the experiment; I did so, and, to my astonishment, the fangs were almost entirely absorbed. Nearly four years elapsed, when the young man (now aged twenty-two) called on me again for further operations; on examination, I found that the permanent tooth had not been erupted, neither had the teeth "closed up," but their relative positions were the same as when I extracted the tooth; the other temporary tooth yet remained in the mouth, but having commenced decaying on its approximal side, I removed it, when I found its fangs about half absorbed. Query. Is there a permanent tooth yet in the alveolus that prevents the other teeth from closing in, or may the germs of the same, by some accident, have been destroyed, and no permanent teeth formed? I would like to hear the opinion of the DENTAL COSMOS on this subject.

In answer to the above, it may be remarked, that perhaps the cuspes of the teeth of the opposite jaws, when the mouth is closed, prevent the space from filling up, on account of the manner in which they adapt themselves to each other. J. D. W.

MAL-POSITION OF THE CANINE TEETH.

BY WILLIAM N. AMER.

THE following case occurred in my practice some two years ago, and as I do not recollect ever having seen a similar case in print, or elsewhere, I send it to you, thinking it may probably prove interesting to the numerous readers of the DENTAL COSMOS, should you deem it worthy of a place therein.

Miss McC., aged about twenty years, called upon me for advice in regard to the root of the right superior incisor, upon which a pivot tooth had been worn for some years. Upon examination, the condition of the root was found to be such that I immediately advised its extraction. To this the young lady assented, and the root was removed at once.

A few days after the young lady visited me again, and called my attention to a small, whitish, and very hard substance which was protruding from the place formerly occupied by the tooth which had been previously extracted. Being very much engaged at the time, I dismissed her with the request that she would call again on the following day, which she did. Upon a closer examination of the mouth, I found it so much contracted as to prevent the possibility of my forefinger passing between the alveolar ridge and the roof of the mouth, and furthermore, that both the superior cuspidati were missing. I immediately asked, Have you ever had any teeth extracted here? The reply was very positively and emphatically, "No, I never have." This being the case, it at once occurred to my mind that the protruding substance alluded to must be her missing cuspidati. The extraction of the lateral incisor, which was very badly decayed, void of vitality, and also somewhat loosened, proved that my suspicions were correct, and the offending organ, which, by a close examination with a fine probe, was found to occupy a position directly across the roots of the other teeth, was with some little difficulty removed. Now as the corresponding tooth on the opposite side of the mouth has never yet made its appearance *in* the mouth, and there is a very considerable prominence over the root of the lateral incisor and first bicuspid, it is reasonable, I think, to presume that the missing tooth is occupying a position very similar to the one which was removed. Such is the simple history of the case as it occurred to me. Has any other member of the profession met with a similar case?

LANCASTER CITY, PA.

SHORT METHOD OF PROCURING PLASTER IMPRESSIONS FOR PARTIAL SETS.

BY D. B. INGALLS.

TAKE an impression in wax in the usual way, using an impression cup large enough to take in the remaining teeth, as far back as is necessary, and a little more of the palatine arch than you wish your plate to cover. Then with a heated knife cut out a cavity in the wax impression the size you intend to make your plate, trim the wax, in making the cavity, as near the depressions made by the remaining teeth as necessary, to get a perfect plaster impression, and then the remaining wax will be a sufficient safeguard to keep the plaster from flowing around the teeth.

When the wax impression is prepared to suit, (and that preparation may include the "woolen fibres, etc.," if necessary,) fill the cavity made in it, with thin plaster, replace it in the mouth, and allow it to remain until the plaster becomes quite hard.

If you have done all with care, you will have no difficulty in removing the impression from the mouth, and can hardly fail of having an accurate impression.

CLINTON, MASS.

LANCING GUMS.

BY JULIUS DIENELT.

HAVING read an article on lancing gums, by Dr. J. D. White, in a previous number of the DENTAL COSMOS, in which he advocates lancing the gums before extracting teeth, and knowing how indispensable it is to do so, we would give the following case in illustration of the aforesaid. It happened to us but a few weeks ago:—

The patient being a youth about sixteen years of age. He applied to us for the extraction of the first right inferior molar. As the tooth in question appeared to be set very firmly, we lanced the gums well all around, except between it and the second bicuspid, where we could not get with our lancet; the forceps were applied, and the tooth drawn quite readily. Upon examining the tooth, however, we were surprised to see the bicuspid firmly united to it, by a flap of hard granulated gum; both teeth had thus been drawn simultaneously. So firmly was the gum united to both teeth, that it required considerable force to cut it loose from them.

The tooth thus accidentally dislodged proved to be perfectly sound, so that we thought it best to slip it back into its socket, requesting the patient to inform us in a short time how the tooth was getting on. Up to this time the tooth is doing well, and has become quite firm again. We have made up our mind, since this occurrence, which at the time we regretted very much, to be more careful than ever to lance the gums well before extracting teeth.

ALEXANDRIA, VA.

GARRETSON'S IMPROVED IMPRESSION CUP.

BY J. FOSTER FLAGG, D.D.S.

IN the proceedings of the Pennsylvania Association of Dental Surgeons, October ninth, mention is made of the presentation to notice of an *improved impression cup*, the invention of Mr. Garretson, of Philadelphia, who is specially engaged in the direction of mechanical dentistry.

It has seemed to me that I might be of service to those members of my profession who find it difficult to get, *at first*, accurate impressions, (as was the case formerly with myself,) by calling more particular attention to this cup.

It was given me for trial some six months since, and has proven at once a simple, ingenious, and efficacious modification of the ordinary cup, enabling the operator to obtain with much certainty a model that shall yield a satisfactorily fitting plate.

The improvement consists in a sort of "false bottom," flaring, something like a plowshare, laterally and anteriorly, which can be *pushed up* as the final act of taking the impression, thus forcing the wax firmly into the anterior portion of the palatine arch and giving that feeling of "touching" at every point which is so desirable to patients for their comfort, and to operators as the guarantee for the usefulness of their plates.

The gratification which I have experienced at the accurate fitting of partial, and the adhesion of suction plates, *with comparatively no trouble*, has induced me to make this communication as a tribute to the inventive genius of a friend, and a means of enabling others to arrive, with equal facility, at equally good results.

PHILADELPHIA, PA.

DENTISTS AND DENTISTRY.

BY G. W. MOFFITT.

Having read in several numbers of the Dental Cosmos communications from various parts of the United States upon the several modes of operating in the different departments of the dentist's office, and thinking that perhaps one more of the same character could hardly be deemed superfluous, I will venture to suggest mine, in one or two instances in mechanical dentistry; not because I consider *it right* to the exclusion of all others, but because I have a notion that out of a greater variety a greater number of students and new practitioners might obtain a mode more convenient and easily acquired and practiced, as one dentist will succeed in a mode of practice that would be utterly useless and unattainable to another. Of this characteristic, however, I will not now speak further than to say that it appears to me that, as a general rule, it must be accounted for by the "peculiar" sphere in which each dentist operates, such as the characteristics of communities, the demands of a certain class of practice, or stratum, as it were, of dental subjects, whose mouths and peculiar physiognomies require a "peculiar" practice; as, for instance, each case that presents itself to the dentist taxes anew the exercise of his judgment, and as no two cases in the practice of a dentist are or can be subjected to the same channel of judgment and the same routine of manipulation, so it might be perhaps with the different fields of practice—the dental administration of one being utterly incapable of reaching the wants or producing the desired results in another. The dentist can work by no set rule or set of rules. If every case in one's practice were manipulated "according to rule," it would produce a pretty mess!—of course the results would vary in every instance—no two being the same. The cause is obvious. The success of each case (I am speaking of cases in mechanical dentistry) is based upon the requisite careful observation of all *its* surroundings; due and particular notice of its peculiar characteristics, viz., the relative position of the jaws; the lips, and the frænum labii superioris and frænum labii inferioris, connecting them with the gums; the mucous membrane between the cheeks and gums, above and below, together with that reflected from the tongue upon the *inner* surface of the lower jaw, and also under the anterior part, forming the frænum ligunæ; (the observation and study of these peculiarities especially, in each case, is the primary and fundamental consideration in securing comfort from artificial dentures;) then the gums themselves, whether they are dense and free from sensibility, or spongy and irritable, together with their prominent or receding tendencies; the palate; the nose and chin, and all the features; a correct combination of all these; and an unerring precision in calculating the results. Unlike the medical profession, where the same pill in the hands of thousands will cure the same ill, "other conditions being equal," the dental profession, it may truly be said, is peculiar, because the same mode of manipulation that produced satisfactory results in one case yesterday would prove totally ruinous in another to-day. Therefore we have such a variety in the dental profession. A stranger going into a number of dentists' offices would scarcely suspicion the occupants of belonging to the same profession, so different are their surroundings; while he could not be mistaken in the whole world of physicians' offices, because there he finds the universal mortar and pill-cutter. But this "peculiarity" in our profession is as it should be. No earthly cause could produce a single practicable general rule, or render one line of practice universal.

But I said I would confine myself to one or two instances of mechanical dentistry. The one suggesting this communication was the best mode of soldering pieces to prevent the warping of plates. To solder without springing the plate is or was the great desideratum with every dentist. Some use plaster and common sand; some the same, with brick-dust and brackets, wires, cross-wires, and other paraphernalia; some force the piece between metal dies, in an iron vice, (!) and "usually get an accurate fit" without demolishing the teeth. (?) Well now, these plans, with a host of others "*too tedious,*" and abstruse, and complicated to mention, may suit some other dentists very well, but they don't suit me.

The only plan by which I can *invariably* succeed is the following *very simple* one, and it may suit some others as well as it does me. Supposing the teeth are ground up and ready for the plaster; place the piece, as usual, on the table, with the cutting edges down. Grind some old slides or muffles in your mortar, about as fine as sand; mix one part of this with two parts of plaster, and enough good asbestus to unite the whole, and turn it over your piece, enveloping it at least an inch thick around the teeth and over the plate. Not less than an inch, because the strength of this resists any undue tendency of the plate to warp; whereas, if it were too light, it might not be any better than plaster and common sand, the tendency of the plate to spring bursting it open. This mixture will set very quickly. Now turn it up and fill the inside of the plate, let it come as close to the backings as you desire the solder to flow, *i.e.* leaving none of the plate exposed but that on which you allow the solder to run. The cutting edges of the teeth are exposed yet, and the spaces between them also. Cover these edges and crowns with a thick coat of the same mixture, letting it run over the outside edge of the whole piece, and over the inside of the teeth, down to the tops of the backings. Now, with a pointed instrument, fill up the spaces between, and your teeth are fixed firmly—they can't rise up out of their places, neither can they be drawn inward. There is no surface left exposed, but that over which you want the solder to flow, viz., the backings, and a certain portion of the plate at their base. (By filling the inside of the plate with the mixture, you avoid any possibility of blistering or burning the surface, especially if it be silver.) The teeth are perfectly enveloped and secure from any sudden change in the temperature, say nothing of being firmly set, yet gently held in their places. Now, cut the solder in *small* pieces, mix the borax, (I always calcine my borax before using it, and thus prevent it from curling up, and throwing off the solder when heating,) mix it with saliva, (saliva holds the solder to its place better than water,) and proceed as usual. Place the piece then on the stove to dry, and when dry, or it is nearly so, remove it to the fire, and leave it there until red hot, take it out in, or on charcoal, and in two minutes, with a blow-pipe and alcohol lamp, your job will be beautifully soldered. Let it get perfectly cool, remove the plaster, and you will find that in forty-nine cases out of fifty, your plate will slip over the model, the same as it did before you put the teeth on. For lower cases, use the same precautions, with this addition—cut a groove across the plaster, from heel to heel of the plate, and then lay a No. 10 or 12 iron wire across in the groove, letting each end rest against the inside edges of the plate. This will prevent the heels of the plate from springing together, or inward, and retain it in its originial shape. By the above process, I never find a broken or displaced tooth, nor a warped or blistered plate.

I have already extended this article beyond its intended limits. But, a word about continuous gum work. Dentists, generally, complain of it as not substantial enough for the generality of mouths. On this ground I have nothing of which to complain. I swedge up the plate as usual, invariably turning a rim to it. I use the one-pinned continuous gum teeth. After the case is in a mixture of plaster, silex, and asbestus, I cut each pin off to the requisite length, and flatten the ends with a small hammer; by which means the foil, when it melts, will more readily adhere to both it and the plate, thus more surely and perfectly uniting them. If the pins are not long enough, which is often the case with the molars, I splice them. I then cut platina wire into sections just long enough, so that when a hook is turned on each end of each piece, it will reach from one pin to another. When the teeth are securely fastened to the plate, as above described, I link these hooks or brackets over the pins, as close to the tops as possible, thus connecting all the teeth, and forming a sort of net-work or fence that is strong and reliable. If the job should crack between every two teeth, it would still retain its shape, because the wire would hold it together as firmly (and it doesn't require half the work and time) as though the backing were joined, if they were lined up in the ordinary way; with this advantage—important advantage—that the gum is in one solid piece, with nothing to detract from its strength, for the connecting wires are not any more clumsy than the pins, thus allowing the front and inside gums to be perfectly and firmly united;

while in the ordinary way of backing them, they are liable to break apart between the teeth, or else the front and inside gums are almost entirely separate and disconnected by clumsy backings, thus leaving them subject to crack, and eventually scale off.

Washington, Pa., 1860.

ODONTIA DEFORMIS.

BY CHAS. H. ROBERTS, D.D.S.

To-day I put in a suction set of four upper incisors for a young lady, between sixteen and seventeen years of age, which Nature, the dentist of all dentated creatures, has, up to this time, refused to set.

The middle incisors of the inferior maxillary are also absent. Nature not only refuses to set these six permanent teeth, but she never set the corresponding shedding teeth. The other shedding teeth, her parents inform me, were regular. The permanent teeth are all perfectly sound and regular, and of usual appearance, except the upper eye teeth, which are a little longer than usual, and sharper, and are perfectly conical in form. The gum presents the usual space between the eye teeth, and the absorption is the same in appearance as though the teeth had been extracted.

She is a young lady in perfect health, of regular, handsome features, without any other physical deformity.

This being the first case of the kind I ever met with, and being a daughter of intelligent parents, I was satisfied there could be no mistake, and their representations would be truthful, I made inquiries concerning the health of the infant and child before and during dentition. They reported her health always good, but I learned, while she was an infant some of the family had scarlatina, and she was affected at the same time, but not so as to give unmistakable symptoms of that disease.

It may be well to give the reasons of this singular freak of Nature as they are understood by the "*old folks*" of the neighborhood. Before the birth of the patient, and during the mother's gestation, she saw a child of a relation that had taken an unfortunate fall and knocked out some of its incisors; so it is perfectly reasonable to their minds that our patient should be incisorless.

Poughkeepsie, 1860.

A NEW WAY.

BY F. H. GUIWITS.

In the winter of 1856–7 Dr. H. called at my office to have a tooth operated upon. It was an upper right lateral incisor, and was then very painful from an exposed pulp. I proposed the usual treatment with arsenic, to be followed by filling, but to this he objected. He had a way of his own, he said, and desired me to treat it so. I consented to do so, having first entered my protest against the unprofessional character of the treatment he proposed.

In accordance with his request, I then extracted the tooth, clipped off about a line in length from the end of the fang, then screwed it in my table-vice, between two pieces of pine wood previously prepared for the purpose, and with proper instruments then proceeded to remove the pulp and nerve, after which I filled it with gold. I then removed the tooth from my vice, immersed it in warm water, and, grasping it with my forceps, having seated my patient in the chair, I replaced it in the socket from which, fifteen minutes before, I had removed it. Here it was retained by a mechanical appliance for a day or two; the soreness gradually subsiding, in two weeks the gum was attached to the neck of the tooth, which was again firm and feeling natural. At the present time the tooth is more yellow than its fellows; there is no other difference perceptible.

Have you (the editors) or any of your correspondents ever heard of a similar case?

I send you a tooth herewith recently extracted from the mouth of a young man twenty-three years of age. It is a superior incisor, and the fang is no more than one-fourth of an inch long. I have never before seen so short a one; have you? I have extracted molars for the same person which had not this peculiarity.

Avoca, N. Y.

We have never heard of a case of extracting and *cutting off* the apex of a tooth and returning it to the mouth. J. D. W.

We have many teeth in our possession with as short roots as the one described above. J. D. W.

WARPED PLATES.

BY T. M. BENTLEY.

I see in the August number of the Dental Cosmos an article by A. M. Hills, giving a plan for swedging sprung or warped plates. The idea is a good one, but is not new to me. I have used it in several instances, and as well for fitting old plates as for fitting those that are sprung in soldering. My plan for getting the casting and counter-casting, which are to be placed in a press or vice, is nearly the same as that given by Dr. Hills. I simply place a rim of wax on the female casting to occupy the space where the artificial teeth are to come, then take a plaster cast, which is exactly adapted to the inner border of the alveolar ridge and the roof of the mouth, in case it is used for an upper set; and, let me remark, I have never sought to use it for the lower set for a very *obvious* reason, but for an upper plate you are often entirely successful.

Jefferson, Wisconsin.

IS NASMYTH'S MEMBRANE IDENTICAL WITH THE CRUSTA PETROSA?

BY J. W. FREESE.

A SHORT time since, while making some microscopic observations upon the enamel of a tooth, I found what I supposed to be "Nasmyth's membrane" upon the exterior surface of the enamel. I would like to inquire if this is a continuation of the crusta petrosa, or a membrane independent of that?

Mr. Nasmyth says that "on examining carefully fine sections of several teeth under the microscope, I perceived here also that the structure in question (Nasmyth's membrane) was continuous with the crusta petrosa of the fang of the tooth." Professor Harris says that he has never been able to discover it except upon the roots of the teeth.

It seems to differ very much from the cementum, in the resistance it offers to chemical agents.

The cementum seems to be the least hard of the three dental tissues, while Nasmyth's membrane is exactly the reverse. Retzius claims to have discovered the same membrane on the internal surface of the enamel fibres.

This membrane has some mystery about it that is not fully understood, and therefore I am led to make these inquiries in relation to its connection with the crusta petrosa or cementum.

BANGOR, MAINE.

TO PREVENT THE WARPING OF PLATES.

BY J. MARTIN.

HAVING read much in the valuable DENTAL COSMOS, as well as other dental journals, on the subject of warping of plates while soldering on the stays for teeth, and having seen in the August number of the DENTAL COSMOS an exact statement of a plan which I tried seven years ago, though not by any means with general success, I feel it my duty as a member of the profession and as one ever ready to "do good and communicate," to give the benefit of my experience on the subject, which is as follows:—

Partly through economy and partly from the opinion that fresh plaster, either in heating or cooling, had as much to do with the springing of plates as anything else, I commenced using the plaster and sand the second time, (having as it were the life burned out,) with barely enough fresh plaster to make the case set, which is about one-fourth of the whole amount. Since that time, which is more than four years, I have not had a single plate to warp while soldering. After following up the practice for some months, and being fully satisfied that plates would not warp under this mode of treatment, I made known my discovery to several neighboring dentists, one of whom informed me a few days since that in two years using the old material for soldering cases he had not the least difficulty with plates warping.

EDITORIAL.

MEMOIR OF PROF. CHAPIN A. HARRIS,

Late of the Baltimore College of Dental Surgery.

On the 29th day of September, 1860, in the City of Baltimore, a star of the first magnitude in dental science faded from its firmament. But it went not into oblivion. The glory of its former radiance remains behind, a patrimony to the family, a gratuity to the profession, and a bequest to the country of the late Professor Harris; which space can hardly circumscribe, nor time obliterate. As far as the literature of dental surgery finds its way among the nations and languages of the earth, the name of Chapin A. Harris is already known; and his published works, equally valuable and voluminous, will transmit that name to remote posterity.

For his usefulness and his fame, therefore, he has taken care to provide. Unlike the hoard of the monetary miser, the bequests of Dr. Harris cannot fail, in any supposable contingency, to reach the parties for whom they were designed. His family, his profession, and his country are his constituted legatees. To them, therefore, in a special sense, is this memorial addressed. It is not intended to be an adequate biography of the departed, as neither time nor preparation enables the writer to produce such a work for the December number of the Dental Cosmos.

Indeed, a life of Prof. Harris, such as the dental profession has a right to expect, and which, peradventure, it is bound in justice to produce, for the benefit of his family and the world, will demand in its execution both the time and the talent in which the writer does not superabound, at the age of three-score years and ten. Nor does the author of this sketch refuse to be told, that his brief remnant of days may better be spent in imitating the virtues, than in writing the biography of his friend.

It is very true that the writer and the subject of his remarks in this notice were very firmly united by a very tender friendship, upon which the survivor does not despise the weakness of dropping the tear of memory.

It was with ready earnestness that most of the leading dentists of the City of New York responded to an invitation, signed by fifty members of the profession, to meet on the twelfth day of October last, to take action in relation to the recent decease of Prof. Harris, well known to all of them, either personally or through his works.

An account of that meeting, embracing the report of the committee on resolutions, and also the letter of condolence, were given in the November number of this journal.

As the report of the other committee has been completed, it is proper to introduce it in this connection, inasmuch as it illustrates the subject of this article.

"BRETHREN OF THE DENTAL PROFESSION:

"The duty of transmitting to you the foregoing proceedings of a meeting of dentists in the City of New York has been intrusted to us. We perform this duty with a satisfaction equaled only by that which you will feel, in responding heartily and liberally to the recommendations suggested by this meeting.

"Dr. Chapin A. Harris devoted the business portion of his life to the advancement of all the interests of the profession with which you are connected. He labored, not only long and faithfully, but also indefatigably and successfully, to elevate your calling to the dignity of a science.

"He edited, for twenty years, the best periodical which the profession can boast; he constructed its only *Dictionary of Dental Science;* he assisted in establishing our first dental society and college; and he gave us the best dental text-book which we have known. These invaluable labors give him a clear title to our gratitude and love.

"But the meeting for which we act expressed a unanimous desire to give a tangible expression to this sentiment, which should assume such a form and character as would be equally gratifying and useful to the worthy family of the deceased.

"This committee, therefore, confidently appeal to every member of our profession throughout the world, to co-operate with the dentists of New York in a testimonial of exalted merit, to be presented to the family of our deceased brother, and earnestly hope that it may be, in the universality of the contributions as well as their aggregate sum, a worthy recognition of the noble service which Prof. Harris has rendered to the profession and the world.

"The professional writings of Dr. Harris, various and voluminous, are cosmopolitan. The *Dictionary*, the *Principles and Practice*, and parts of the *Journal*, now in its twentieth octavo volume, have long been shedding the lustre of their science through the world. With the language in which he wrote, go the truths which he inculcated; and even out of that language into the dialects of Europe gush the streams of knowledge from his prolific pen.

"Prof. Harris gave to his brethren not only his days, but his nights. He gave them unstintingly the electric forces of his body and the vital energies of his mind. As the tallest pine peering above its companions on the mountain top falls first before the storm, so fell our brother, leaving us to tremble in the shock of his fall.

"And what better can we do than to administer all the consolation that circumstances allow us to bestow on those who are most afflicted?

"The committee, whose names are appended to this circular, have been instructed to solicit the means of presenting a money testimonial to the family of the deceased.

"The committee, therefore, will transfer to Mrs. Harris, in money, all sums from one dollar upward, that may be contributed to this fund, and they beg leave to make the following suggestions:

"1. That contributions to the fund proposed be forwarded by mail or otherwise, with the address of the donors, to Dr. Eleazar Parmly, No. 1 Bond Street, New York, Chairman of the Executive Committee, on or before the first day of February next, from all parts of the United States; and before the first day of May, from all foreign countries.

"2. That every dentist who has not purchased the professional works of Dr. Harris, will do so for his own benefit, as well as for the advantage of the author's family, who hold the copy-right.

"Eleazar Parmly,
"Solyman Brown, } *Executive Committee."*
"E. J. Dunning,

New York, October, 1860.

The foregoing circular, in connection with the proceedings of the New York meeting of dentists, and letter of condolence to the family of Dr. Harris, has been prepared for circulation, and will be forwarded immediately to all dentists whose address is known; and, in case it should fail to reach any of the subscribers to this journal, it is confidently believed that they will regard its appearance in the Dental Cosmos as a sufficient invitation, on the part of the committee, to induce all those members of the profession who are willing to contribute to the "Harris Testimonial Fund," to forward the amount of their subscriptions to Dr. Eleazar Parmly, Chairman, No. 1 Bond Street, New York, as soon as it may suit the convenience of the contributors.

These reports of the several committees of the New York meeting, together with the remarks of the chairman, Dr. Eleazar Parmly, present so clear a view of the principal features in the professional life of Dr. Harris, that the same grounds needs not to be traversed in this notice. They show in the most convincing manner that Prof. Harris was greatly respected, admired, and beloved by the profession, for which he labored during a quarter of a century with unrivaled zeal and energy.

They show that his heart and hand were promptly given to all the great enterprises by which the literature, science, and art of his profession have been raised from puling infancy to vigorous manhood.

They show that he placed his labors, his health, and his life on the altar of usefulness; or, to use the simplest phraseology, he actually wore himself out in the cause of humanity. Consequently, he was a soldier of science, who fell gallantly on the field of battle, and that too, after the battle had been won.

All further inferences that may fairly be deduced from the doings of the three committees we leave to the judgment of the reader, while we proceed to adduce a few facts and sentiments left in manuscript by the late Dr. C. O. Cone, once an associate with Dr. Harris in the Baltimore College, but now advanced like him to the society of the immortals.

"Dr. Chapin A. Harris commenced his medical studies in 1820, and began to practice in 1823, in Ohio.

"His attention was called to dentistry by his brother, John Harris, who, like James and Chapin, became well skilled in medical theory and practice before engaging in the dental profession.

"But Dr. C. A. Harris gave but little attention to dental practice, except to extract and clean teeth, and insert a few fillings, until 1827, when, after studying the works of Hunter, Fox, and Delabarre, he entered upon the exclusive practice of dental surgery. From 1827 till 1833, he visited most of the large towns and cities in the Western and Southwestern States. Wherever he went the public estimation of the profession of dentistry was elevated, and his own reputation established.

"In 1833 Professor Harris opened an office in Baltimore, where afterwards he continued to perform the important duties of his calling.

"During the period between his taking up his residence in Baltimore and the year 1837, he employed a large portion of his leisure in contributing to the pages of periodical literature, usually making his profession the subject of his contributions.

"In 1838, feeling that his contributions, although productive of good, by introducing the profession to the reading and thinking community, nevertheless failed to gain one of their ends—that of improving and benefiting his brethren—he resolved that his scientific writings should take a more compact and permanent character.

"This induced him to prepare and publish, in 1839, the first edition of his 'Principles and Practice of Dental Surgery.'

"In addition to this, Dr. Harris had felt, for a long period, the necessity of some respectable receptacle for treasuring the experience of the profession, and its current literature.

"To secure this object he visited the City of New York, and urged upon a few professional friends the propriety of establishing a periodical devoted especially to the interests of the profession. His plan was readily embraced by a few ambitious minds, and a meeting was promptly called, composed of some of the leading dentists of that city. The immediate result was, that several gentlemen contributed a hundred dollars each, and others sums of a smaller amount, so that the expense of publication for one year, in monthly numbers, was fully provided for.

"Dr. Harris and Eleazar Parmly were joint editors; and the latter gentleman, together with Drs. E. Baker and S. Brown, were the publishing committee. In accordance with this arrangement, the first volume was issued in the City of New York, under the title of '*The American Journal of Dental Science.*'

"Feeling that only a part of his object had been accomplished by establishing a dental periodical, Dr. Harris set himself the task of creating facilities for educating young men scientifically for the duties of the dental profession.

"Accordingly, in the winter of 1839–40, almost entirely unaided, he obtained signatures to a petition to be laid before the Legislature of Maryland, for the incorporation of a College of Dental Surgery at Baltimore. After some opposition from influential quarters, and other difficulties which he knew how to overcome, the charter was granted, and he continued to exercise the duties of one of its most important professorships with great advantage to the institution, the profession, and community at large.

"Anterior to 1840 there had been but little concert of action, or associated organization among dentists, although the formation of a dental society in the United States had been a topic of conversation with some members of the profession. But as yet nothing had been done toward the accomplishment of that object.

"In this state of things, Dr. H. H. Hayden, having visited New York and Boston with the design of engaging the co-operation of some of his brethren in those cities in the formation of a National Dental Society, Dr. Harris, among others, immediately responded to the call, and the speedy result was the organization of the 'American Society of Dental Surgeons,' which ultimately embraced most of the eminent dentists of America, and made honorary members of many distinguished dentists in Europe.

"The benefits of this association were abundantly manifest in both hemispheres, and are still felt on both shores of the Atlantic.

"In 1840 he published a '*Monograph of the Physical Characteristics of the Teeth.*'

"In 1841 he published a '*Dissertation on the Diseases of the Maxillary Sinus.*'

"Since that period he has revised his '*Principles and Practice*' through several editions.

"He has also compiled and published his '*Dictionary of Dentistry and Medicine*,' the result of untiring industry and research.

"He has translated from the French the works of Delabarre, greatly to the advantage of the profession.

"In reviewing the life of Dr. Harris, we are warranted in saying, that he has not only labored harder, but spent more time and money, for the advancement of his profession than any other man. If it be said that his position gave him opportunities of usefulness not enjoyed by others, we reply, that his peculiar position and varied opportunities were themselves the offspring of his own activity and zeal, insomuch that his connection with the profession may be regarded as the rising and culmination of an intellectual orb whose radiance has illuminated the entire sphere of dental science with a noon-day glory."

The religious sentiment in the mind of Dr. Harris was deep-seated, fervent, and serene. His reliance on the infinite wisdom and perfect goodness of his Creator was firm and enduring. It never forsook him for a moment in his long hours of unspeakable anguish while death was calling him to the tomb, and the tears and prayers of his family were invoking his reprieve. Often did he implore his wife and his children to submit confidingly to the will of the Supreme. He told them that God was their Father in a divine degree, and that blessedness would be theirs if they put their trust in Him.

The religious experiences of Dr. Harris extended back almost to the date of his marriage. Mrs. Harris had been a member of the Baptist connection before their nuptials. He himself adhered through life to the Methodist persuasion. But he was exceedingly liberal toward all denominations. At his funeral, an Episcopalian and a Methodist clergyman unitedly commemorated his virtues and committed his body to the tomb.

On the portal of that tomb his Christian faith has already written, "*E mortuis resurgam*"—"I shall arise from the dead." B.

Postscript—to Contributors.—The members of the committee do not find themselves at liberty to allow any sentiments of delicacy to intervene between them and their duty in regard to the relief which the Harris Fund is intended to give to the bereaved family of our departed brother. It is self-evident, without either investigation or argument, that the widow and children of the late Professor Harris have been deprived by death of the prospective fruits of his industry, and that his life has been a generous self-sacrifice to the permanent interests of his profession.

In corroboration of these statements, and in further illustration of the condition of Dr. Harris's affairs, we give an extract from a letter written by an individual well acquainted with the circumstances of the family.

> "His private practice was large, and from its income most men would have saved something in the course of twenty-five years. But with him it was different. His family was always large; the number of his dependents great; his manner of housekeeping generous; and his liberality unbounded. None called upon him in vain. A confidence in the efficacy of his own prodigious exertions, together with a certain constitutional indifference about money, caused him to delay the retrenchment and accumulation which he foresaw would be necessary, to a period constantly remote."

These facts are so affecting, that their force cannot be intensified by either eloquence or logic. Let their influence be attested by the generosity of our professional brethren, in humble imitation of the good Samaritan!

Respectfully,
E. Parmly,
S. Brown,
E. J. Dunning.

New York, October 20, 1860.

Obituary.—Died, in the month of August last, in Little Rock, Arkansas, of that fell destroyer consumption, Dr. Ezekiel L. Cloyd.

The countenance pales and the heart sickens at the tidings of death, yet we refrain not from recalling a recollection of the departed, by placing on record our estimate of his worth.

Dr. Cloyd was a member of the graduating class of the Pennsylvania College of Dental Surgery, session of 1859 and 1860. Unobtrusive in his manner, courteous in his intercourse, he soon won the esteem of his fellow-students and the confidence of his preceptors. Zealous in the pursuit of knowledge, he strove with diligence to compensate, by earnest application, for the want of an early training, nor did he fail to add to his natural nobleness of character a proficiency in the art of his choice that bid fair to heap upon him the honors and emoluments of his profession.

But, alas! how vain are the hopes of man! the most gorgeous conceptions of his fond imagination are in the twinkling of an eye cast down; and the embodiment of his ambitious spirit "is resolved to earth again, to become a brother to the insensible rock and to the sluggish clod, which the rude swain turns with his share and treads upon!"

Well were it for all who are left to deplore the changes that chill the blood and cause heaviness of spirit, could we, when the summons comes, like the departed, "sustained and soothed by an unfaltering trust, approach our end like one who wraps the drapery of his couch about him and lies down to pleasant dreams." J. L. S.

REVIEW OF DENTAL LITERATURE AND ART.

BY J. H. M'QUILLEN, D.D.S.

An Elementary Treatise on Human Anatomy. By Joseph Leidy, M.D., Professor of Anatomy in the University of Pennsylvania, etc. With three hundred and ninety-two illustrations. Philadelphia: J. B. Lippincott & Co., publishers. 1860.

In the preparation of a work on anatomy, as the author is compelled to travel over a well-beaten track, there is little or no room for originality, and his principal claim to consideration therefore must rest upon the *manner* in which the subject-matter is presented to the reader. One of the principal objections to the majority of text-books of anatomy and physiology is that they are so elaborate and voluminous that students just entering upon their studies find themselves in a maze, from which, after a brief struggle to master the contents of the work, the majority free themselves by seeking in incomplete compendiums those prominent points of interest which the compilers deemed of sufficient importance to present. Now either of these extremes is objectionable, and something which should be a happy medium between them is desirable.

Fully recognizing this fact, no doubt, Professor Leidy states in the preface that "this work is intended as an elementary treatise on human anatomy, and is not an elaborate system adapted to the use of those who have advanced in anatomical knowledge." He adds further, "that the author has attempted to prepare such a book as he feels would have been of service to himself in the commencement of his studies."

After a careful examination of the contents of this work, during which we were impressed with the clear, comprehensive, and terse manner in which the text is worded, it affords us much pleasure in recommending it to dental students as a work admirably calculated to lighten their labors in acquiring a knowledge of anatomy. Much of this will no doubt be due to the plan adopted by the author of employing a single name for each part. For, as he truly remarks, "much of the difficulty of which we hear constant complaint, in the acquisition and retention of anatomical knowledge, arises from an excessive, and in some other respects, objectionable nomenclature. Not only has the naming of comparatively unimportant parts been carried to an extreme, but in numerous instances the same parts are designated by a multitude of names, which are indiscriminately used by different writers." Although confining himself to a single term in his descriptions, for the accommodation of those who may desire an acquaintance with the various terms employed by other writers, the author adds a copious synonymy in foot-notes.

An important and attractive feature in the work is that a large proportion of the illustrations, all of which are admirably executed and faithful copies of nature, are from original drawings made by the author.

The mechanical execution of the work, the typography, binding, etc., is in that superior style which characterizes all the works sent forth by the publishers.

A PRACTICAL TREATISE ON MECHANICAL DENTISTRY. By JOSEPH RICHARDSON, D.D.S., M.D., Professor of Mechanical Dentistry in the Ohio College of Dental Surgery. With One Hundred and Ten Illustrations. Philadelphia: Lindsay & Blakiston, 1860.

Within the past few years there has been a growing demand on the part of the dental profession for monographs in the different departments that engage the attention of its practitioners. In response to this we have presented in the work under consideration the first effort that has been made to supply the dental student and practitioner with a treatise devoted exclusively to mechanical dentistry.

The author states that, "in the accomplishment of this undertaking, the primary and leading purpose has been to furnish the student and more inexperienced practitioner with a practical guide to the manipulations of the laboratory, with accompanying elucidations of the elementary principles which underlie the practice of this important specialty."

The work is divided into two sections. The first part, under the head of *Metals Employed in Dental Laboratory Operations*, embraces a description of the different modes of applying heat; the properties of gold; the influence of alloying on those properties; method of refining; formulas for gold plate, of different degrees of fineness, whether to be used as a base for artificial dentures, clasps, wire, etc.; gold solders: method of determining any given alloy; a valuable table of gold coinage of different nations; manner of procuring an ingot, with the manipulations it is subjected to in reducing it to the various degrees of thickness requisite for use; method of obtaining gold wire and constructing spiral springs. The general properties of silver; alloys, reduction to required forms for dental purposes; formulas for silver solders; and the properties and uses made of platinum, aluminum, copper, zinc, lead, tin, antimony, and bismuth, completes this section.

The second section, under the head of *Artificial Dentures*, embraces treatment of the mouth preparatory to the insertion of artificial dentures; methods employed in obtaining impressions of the mouth with wax, gutta-percha, and plaster of Paris; manner of obtaining plaster models, metallic dies and counterdies; means employed in retaining partial sets of teeth in the mouth and in obtaining an antagonizing model; selecting, arranging, antagonizing, investing, adjusting, and soldering the teeth; methods of constructing and retaining entire dentures in the mouth; substances used in the manufacture of porcelain; manipulations incident to the construction of porcelain block teeth; manner of mounting artificial teeth by means of the fusible silicious compound, vulcanite and cheoplastic methods; and closes with the consideration of obturators.

The above brief sketch is not offered as a synopsis of the contents of the work, but rather to give the reader some idea of the order in which the different topics are presented. By this it will be observed that in the arrangement of the work the author has proceeded in an orderly and systematic manner, and his description of the different articles employed in the dental laboratory and the various methods of manipulation in the construction of artificial dentures are given in a clear and comprehensive manner. Some of the plans advocated by the author are different from what we should advise, but we will not pretend to say that his course may not be the best. Embracing, as the work does, all the prominent points connected with mechanical dentistry, only excepting, we believe, a description of the manufactory of single plate teeth, and Dr. Calvert's method of moulding block teeth, we gladly recommend it as a useful and valuable treatise, particularly to those for whom it was expressly prepared.

The work is liberally illustrated, and the general execution of the mechanical details reflects much credit upon the enterprise and liberality of the publishers.

In conclusion, we notice in the course of the work that a quotation from an article contributed by Dr. J. L. Suesserott to the DENTAL COSMOS is credited by the author to Dr. T. L. Buckingham.

AMERICAN JOURNAL OF DENTAL SCIENCE—OCTOBER.

ON FILLING CARIOUS CAVITIES BETWEEN THE BACK TEETH. BY CHAS. WOODNUTT, DENTIST.—Translated from the German, by W. A. HARRIS, M.D., etc., Baltimore.

On looking at an article under the above caption, presented in the original department of the *Journal of Dental Science*, we were somewhat surprised to recognize a communication from the pen of our friend, Dr. Chas. Woodnutt, which was published originally in the January number of the DENTAL COSMOS, under the head of *Approximal Cavities*, and, to the best of our recollection, in the English language. We can only account for its being found in the German tongue, by supposing that it was translated into that language, for one of the dental magazines published in Europe. It there, no doubt, attracted the attention of Dr. Harris, who, recognizing the practical character of the communication, deemed it worthy of a translation into the English. During its peregrinations from one language into another, and then back again to the one it started from, not only the title, but the text have undergone some mutations, but they are not greater than one would suppose incident to such transitions.

NEW YORK DENTAL JOURNAL.—OCTOBER.

In a recent number of the *New York Dental Journal*, the proprietor offered as an inducement to contributors, a number of prizes for essays on specified subjects; the award to be made by a committee of gentlemen entirely ignorant of the names of the writers. In response to this, four articles, on "taking impressions," from the pens of different parties, were forwarded to the journal, and the committee, taking them under consideration, awarded the first prize of six silver impression cups to Dr. Forbes, and the second prize of three silver impression cups to Dr. Barker. As comparisons are said to be odious, we will not pretend to enter into a consideration of the relative merits of the two papers, but publish them both without comment, that our readers may have an opportunity of forming their own conclusions with regard to their respective merits.

"ON TAKING IMPRESSIONS. (BY GEO. T. BARKER, D. D. S.)—The importance of perfect impressions for artificial dentures must be acknowledged by every practitioner who values and truly appreciates the responsibilities of his profession, and without doubt the most fruitful cause of non-success is due to the non-performance of this one duty. That there is much room for improvement in this branch of our art must be apparent to every thinking mind. For convenience in treating this subject, I would divide the taking of impressions into four parts, viz.:

"*First.* An examination of the mouth.

"*Second.* The preparation of the mouth.

"*Third.* Choice of material.

"*Fourth.* The different methods for obtaining perfect impressions.

"An examination of the mouth of the patient is of the first importance, and should be accomplished in a thorough and perfect manner. If the case presenting is one requiring a full denture, the mouth should be examined, to ascertain that no roots are present in the alveolar arches, that will destroy the adaptation of the plate to the mouth. Should the case be one where a temporary set is desired, and it is necessary to extract a number of teeth, each should be separately examined, and such selected for extraction as may be carious or of no value. If, however, the examination should prove all the teeth, with the exception of two or three, to be defective, I should recommend the extraction of all of them, being governed, of course, by the position and particular teeth; for instance, were the sound ones either the superior or inferior cuspidati, would not under all circumstances advise their removal.

"The gums, saliva, and particularly the soft parts covering the alveolar and palatine processes, should be carefully examined, care being taken to remember their general condition. If the gums be found in an inflammatory condition, induced by carious teeth, salivary calculi, or other local irritants, it should be noted as requiring treatment. The saliva should also be looked to, and, if abnormal, the operator should ascertain if due to local or constitutional causes; if to the former, he should recommend the proper treatment.

"On examining the soft parts, care should be taken that there exist no fissures formed by folds of the mucous membrane on the palatine processes, that will destroy the adherence of the denture. Where such are present, the parts should be separated with small instruments, that the depth may be ascertained, so that alteration and allowance may be made in the plaster model. The dental practitioner will also meet with cases in which the slightest touch of the finger to the soft parts covering the palatine process will produce a constant tendency to emesis; with such patients it is useless to attempt to obtain an impression, but would direct them to return home, and that several times each day for one week, a silver spoon should be placed in contact with the hard and soft palate; by such treatment the tendency to emesis is overcome. Having noted the condition of the mouth and the teeth that require extraction, I should next proceed to the preparation of the mouth.

"The extraction of the teeth should be accomplished in as short a time and with as little violence as possible to the surrounding parts. If the gums be inflamed, from causes above referred to, bleeding should be encouraged by repeated washing of the parts with warm water. The sharp projections of the process should be removed by means of cutting forceps, that the tongue may not be injured by contact, and loose patches of gum may be cut away with scissors.

"The mouth being properly prepared, the next subject for consideration is to obtain an impression; this may be taken immediately after the extraction of the teeth, or at a subsequent period. The former I prefer, and usually wait only until bleeding has ceased before taking an impression. Having decided so to do, the next subject of thought should be of the material best adapted, and what would furnish the best results. The choice of material must be governed by circumstances, of which the operator alone can judge. Should the case be one requiring only the anterior teeth to be replaced and be retained in position by means of clasps, it may be advisable to take the impression with wax alone; but in such cases would usually prefer to take one first with wax, and, after trimming it slightly, pour over it a small quantity of thin plaster, and again return it to the mouth, and so obtain a good plaster impression.

"A perfect plaster impression for a partial set may be obtained by first placing around the necks of the teeth a small portion of wax, which will prevent the adherence of the plaster to the teeth; the wax will be removed with the plaster impression; and, if the teeth have 'drawn,' the natural shape can be restored upon the plaster model. If a wax impression is desired, care should be exercised that a good article is obtained, as much of the white wax particularly is mixed with fats that make it useless for dental purposes. The yellow is more readily procured free from adulterations, and is in many cases preferable.

"In introducing the impression cup, care should be taken that it is securely and directly pressed into position, as indirect pressure will destroy any wax impression. The impression cup for the superior arch should be so formed that the finger may press the wax into the spaces between the teeth and against the palatine processes. The wax should also be pressed firmly with the finger into the inequalities of the arch directly in the median line.

"I will now proceed to speak of plaster of Paris or sulphate of lime as a material for taking impressions, which will, if properly manipulated, produce better results than can be obtained with any other agent, though all may, under some circumstances, be exceedingly useful. I will first speak of obtaining an impression of the superior arch. Upon determining to take a plaster impression, a cup should be selected that will nearly fit the arch, and will extend around the tuberosities of the maxilla. As remarked in the beginning, the mouth should be carefully examined, and if the soft parts covering the palatine or alveolar processes are soft or spongy, the plaster should be introduced thin, and with great care. The soft parts covering the tuberosities will be found occasionally soft and movable, requiring the greatest care to obtain a perfect result.

"The plaster of Paris and water, with a small portion of salt, (to hasten its hardening,) should be mixed thoroughly in a glass or cup with a spatula, which should be poured into the impression cup, and quickly transferred to the mouth, care being taken that no particles fall upon the dress or face of the patient. The proper introduction of the cup is one requiring nice manipulation, and should be accomplished in the following manner:—

"The right side of the cup should be first introduced, pressing it well toward the right cheek; the left cheek should next be distended by the left index finger of the operator, which will allow the cup to pass readily into the mouth. Having introduced it, the right index finger should be placed in the centre of the cup, and a gradual upward pressure made, at the same time that a slight forward and backward motion is given to the cup.

"If before its introduction hardening of the plaster has commenced, or there are bubbles of air between the plaster and the mucous membrane, the last-named motions given to the cup will overcome these disadvantages. In obtaining plaster impressions, the head should be thrown slightly forward, that portions of plaster may not flow over the soft palate, and induce emesis. After the impression cup is in its right position in the mouth, and previous to the hardening of the plaster, the finger should be introduced between the cheek and the impression, that no muscular folds may by their presence destroy the perfection of the impression.

"The length of time necessary for it to remain in the mouth must be judged of by the quality of the material. Should the plaster have been previously subjected to heat, by means of which a portion of its water of crystallization has been driven off, it will harden very quickly. The ordinary plaster in use will usually set in four or five minutes.

"In withdrawing the impression from the mouth after it has hardened, the same care as in its introduction should be observed, that the soft parts may not be injured, and the impression unnecessarily broken. If in its removal, it is unavoidably fractured, the pieces may be retained and replaced with but little trouble.

"Lower impressions may be obtained as readily in plaster as with any other material, provided a few simple facts are remembered and acted upon. The plaster should be mixed somewhat thicker than for the superior arch, the same care being requisite in the introduction of the cup and the position of the head. Directions should also be given to elevate the tongue while the impression cup is being pressed into place; it should then be allowed to take its natural position in the mouth; this will prevent the retention in the impression of any loose folds of mucous membrane or muscular tissue of the tongue, or its attachments. The same care should be extended to free the muscles of the cheek.

"The above instructions, if followed, will, in my judgment, give any operator what is most to be desired in forming artificial dentures, viz., a perfect impression of the mouth."

"TAKING IMPRESSIONS. (BY C. M. FORBES, St. Louis, Mo.)—A correct impression of the mouth depends, in a great measure, upon a careful attention to the details of the operation. It is necessary to be elaborate, overlooking no part of the operation because it seems to be unimportant. Every single detail bears a relative importance to the whole, and nothing can be omitted without affecting the end to be accomplished. It is requisite that the operator should possess a nicety of manipulation; and quite important that every article should be clean and in order. Having ascertained the mouth to be in a proper condition for taking the impression, I first select a suitable impression cup, (should prefer *silver*,) which must conform, in size and shape, as near as possible to the shape of the arch. If there be peculiarities in the case, which render the ordinary cup unsuitable, I would take an impression in wax, get up metallic dies, and construct a cup out of sheet zinc, which would be perfectly adapted to the angular form of the arch. Having selected a cup, and arranged convenient for use such articles as will be needed—napkins, wax, plaster, lamp, etc.,—I heat the wax slowly over a spirit-lamp, working it thoroughly with the fingers. The wax should be pure, and, if remelted and worked, it is better than new. When it is sufficiently soft, I take a first impression of the mouth in wax. After this has become cool, I cut away the outer alveolar ridge, down to the edge of the cup; a part of the posterior portion is also cut away. Before taking the second impression, the patient should be seated in an upright position, with the head a little forward to prevent the plaster from getting into the throat; and a napkin should be spread upon the breast to prevent the patient's clothes from being soiled by the plaster or saliva that may drop from the mouth. I then prepare the plaster, which has been previously dried or boiled, mixing it in warm or tepid water, in which a little salt has been dissolved. It should be stirred a moment or two until thoroughly mixed. It is then poured into the wax impression, which is replaced in the mouth, and held firmly in its place until the plaster sets. This usually requires from three to seven minutes, depending somewhat upon the quality of the plaster. When some of the teeth remain in the mouth, and especially when there is an abnormal absorption of the gums, leaving the necks of the teeth bare, the removal of a plaster impression from the mouth without injury to it, is often attended with considerable difficulty; but by exercising care and patience, the operator will seldom fail to obtain a good impression;

and even should it be broken, by preserving the pieces, it can in most cases be restored to its original perfection. After removing the impression, it should be permitted to harden a few moments, then oiled or varnished, and it is ready for use."

DENTAL REVIEW, LONDON—SEPTEMBER.

"OBITUARY.—It is with extreme regret we announce the death of one of the most esteemed members of the profession in this kingdom—Mr. James Harley, of Davies Street, Berkeley Square.

"Mr. Harley was born of Scotch parents, at Gibraltar, in the year 1797, and was apprenticed to Mr. Law, Dentist, of Edinburgh, about the year 1814. After the termination of his apprenticeship, he became the assistant of Mr. Thomas Hutchins, of Edinburgh, who subsequently recommended him to his brother, Mr. William Hutchins, of Hanover Square, London, with whom he remained in the capacity of assistant during many years, until he entered into practice for himself. The kindly feeling which had ever existed between Mr. Hutchins and Mr. Harley continued to the last, as was evinced by the frequent allusions made by Mr. Harley in his late illness, to his old friend and patron. In his political views Mr. Harley was a consistent and firm supporter of the principles of independence and unity of the dental profession. He was one of the earliest members of the College of Dentists, was for three years a member of Council, and nearly two years a vice-president. He was also a member of the Board of Examiners, and a large contributor of specimens, of considerable value, to the Museum. His attachment to the College was most sincere and unaffected. At the distribution of the prizes of the Metropolitan School of Dental Science, he rose from a sick-bed to be present; it was his last attendance: nevertheless, he retained his recollections of his colleagues, and one of his latest wishes was that a simple recognition of his position as an officer of the College of Dentists of England should be inscribed over his grave.

"For some time previous to his death, Mr. Harley had returned to his residence at Finchley, where he died on the 22d of August, at the age of sixty-three years.

"In Mr. Harley, the profession has lost one of those simple-minded, single-minded men upon whom, after all, everything that is good in this world rests. Too modest to enter into political intrigue, too independent to be drawn from a principle he believed to be right, and too active to be careless in the question of professional welfare, he presents a biographical figure which abler men may envy, and friends may remember with an affection as lasting as their own careers."

THE DENTAL REVIEW, LONDON—OCTOBER.

"ON A NEW METHOD OF ATTACHING TEETH TO A PLATE BY MEANS OF RUBBER. (Communicated by WM. HOPKINSON, M.C.D.E.)—In making known to the profession the following method of mounting mineral teeth on gold or other metals by means of vulcanized rubber, I do not intend to lay claim to any originality, as other practitioners may possibly have adopted the same *modus operandi*. Believing, however, that the present plan is a desideratum, where it is necessary to restore the parts which have been lost by absorption, which at present can only be done by block-work, and then not with the same nicety as by the use of vulcanized rubber, I have been induced to avail myself of your valuable journal for the purpose of making it more generally known.

"A plate having been struck up, the teeth are prepared and mounted upon it with wax, and the bite properly adjusted in the usual manner when vulcanite is used. A pointed broach is to be passed between the teeth and wax at intervals, so as to mark the plate, keeping as near the teeth as possible. The teeth and wax are then to be removed, and holes are to be drilled corresponding to the marks on the plate. Into these holes, gold wire, about the size used for tube-teeth, or thinner, according to the strength required, is to be soldered, and the ends of these wires are then to be bent round in the form of a loop, so as to touch the plate.

"A sufficient number of pins having been inserted into the plate to make the case firm, the wax and teeth must be replaced as at first. The wax should be shaped on the lingual side of the teeth, taking care to cover the looped pins, so that they may remain out of sight when the case is finished. If it is necessary to build out so as to represent the gum on the labial side, keep the teeth a little apart at their necks, and build up with wax the same as you would in making a case in vulcanite, bearing in mind that the curved pins already soldered to the plate are a sufficient stay for the rubber in front. Having got the teeth in position, and the wax trimmed to represent the case when finished, place the model with the piece in the vulcanite flask, and proceed in the usual way for vulcanizing.

"I may observe that I invariably use steam-heat when vulcanizing. When your case is sufficiently hardened, it is finished and polished in the same manner as in other cases. The above plan gives a greatly improved appearance to the case, an artificial gum being substituted for the long, unsightly fangs of the mineral teeth. I have found the vulcanite, after twelve months' trial in the mouth, to be as adhesive to the teeth and plate as when first inserted."

The Dental Enterprise—November.

"The Chair of 'Principles of Dental Science and practice of Dental Surgery,' held by the late Professor Chapin A. Harris, has been filled as follows: The 'Principles of Dental Science' will hereafter, in connection with 'Mechanical Dentistry,' form the chair of Professor Austen.

"The professorship of 'Practice of Dental Surgery' is filled by the appointment of Ferdinand J. S. Gorgas, A.M., D.D.S.

"We have been in constant intercourse with the students of the college during the three past years in which Professor Gorgas has discharged the duties of the demonstratorship. He will no doubt maintain, in his new position, the high reputation he has already earned as a thorough, accurate, and most skillful teacher. We think none can fail to commend the wisdom of the Faculty, in thus consulting the good of the student, by the selection of gentlemen whose fitness for the difficult duty of teaching was well known to them.

"We understand the honorary office of President of the College will expire with the decease of Professor Harris. The Faculty, by appointing no successor in this office, pay, we think, a just tribute to the memory of the founder of the Baltimore College, and the originator of the scheme of dental collegiate education."

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEO. J. ZIEGLER, M.D.

Teeth of Alligators.—The following instructive remarks on this subject occur in an interesting paper in the *New Orleans Med. and Surg. Jour.* for November, by DR. BENNET DOWLER, on comparative anatomy and physiology, in which he treats more particularly of the Crocodilus Mississippiensis:—

"The mouth of the alligator, never completely closed against either air or water, owing to the absence of lips, presents on each side double curves or gently undulating lines of the jaws, the general bearings of which rise above the horizon considerably from the tip of the muzzle to the posterior angles of the mouth.

"The teeth, variable in size and length, are conical or of the canine type, a portion being somewhat blunt, especially posteriorly, but none adapted to grinding. They are more formidable in appearance than in reality, being hollow shells and easily fractured, even by biting hard substances.

"In an animal from ten to twelve feet long, the largest tooth is less than a quarter or the third of an inch in diameter, while a vast majority are much smaller. The teeth are inserted into distinct sockets, except about one-fourth, which enter a trough or gutter, forming the posterior angles of the mouth.

"Anatomical adaptation, as well as actual observations, show that the teeth are designed to seize, hold fast, pierce, and kill their prey. Alligators find much difficulty in preparing their prey, when the latter are too large to pass the unyielding bony strait of the jaws and palate. To facilitate this preparation for deglutition, they bend their heads laterally, so as to bring the mass within the reach of one of the forelegs, in order to tear the food to pieces. The limb and claws, however, are feeble aids for this purpose, being comparatively small. In fact, they appear to be generally unable to divide solid bodies which are too large to be swallowed whole, as will more fully appear in the sequel.

"Fròm the curves of the jaws, the variable size, length, and non-opposition of the teeth, and from the position which the teeth of the under jaw take within the dental arch of the upper, and from the fact that the under teeth enter into shallow holes, or a kind of sockets, in the soft parts or alveolar gums of the roof of the mouth, as well as from the acute, almost needle-pointed shape of the teeth, especially the longer ones, it is evident that the dental apparatus can have no horizontal motion forward, backward, or laterally, and that they act only perpendicularly to the plane of the jaws, penetrating, but never masticating by grinding; nor can they divide by incising their food or prey, if solid, resisting, and coherent. The reader will recollect that, from the days of Aristotle to the present century, it has been generally asserted that the upper jaw opens without moving the head. Even Denon (born 1747, died 1825,) of the French Egyptian Expedition, is quoted as authority for this anatomical myth, (*Voy.* i., 185.) St. Hilaire, naturalist to the same expedition, embarrassed by the classics, (Aristotle, Herodotus, and

Pliny,) does not fully deny their statements in this behalf.' The missionary Labat, (born 1663, died 1738,) a voluminous and instructive writer of travels in the West Indies, including the Natural History of these islands, maintained, according to ancient authority, that the crocodile's upper jaw only is movable, (T. ii. p. 344, *Nouvelle ed.*, 1742.)

"The number of the teeth, though little variable, has been generally estimated by writers so contradictorily as to show that their accounts are little reliable, even in the osteology of this animal, though less so in the dental apparatus than in some others.

Cuvier says crocodiles have twenty-seven teeth above and twenty-five below. He subsequently says they have nineteen above and fifteen below. (*Anatomie Comparée*, t. ii. p. 517.) Of the American crocodile, he says, it has nineteen teeth above and nineteen below, on each side, (*dix-neuf en haut dix-neuf en bas, de chaque côte. Ib.*) Again, in his *Ossemens Fossiles*, he says of living crocodiles, that the alligator has at least nineteen, and sometimes twenty-two teeth on each side of the under jaw, and at least nineteen, but often twenty, on each side of the upper one; of the Nilotic crocodiles, that they have fifteen below and nineteen above, on each side. St. Hilaire's enumeration differs from the preceding, being $36+30=66$.

"Mr. Gore, the translator of the first edition of Carus's Comparative Anatomy, quotes from Cuvier as follows: 'The cayman [alligator] has nineteen teeth on each side, both in the upper and lower jaw: in the crocodile there are nineteen above and only fifteen below,' (ii. 50.) By the way, Carus's plate, (xi. figs. 10 and 11.) purporting to represent the head of the Nilotic crocodile, is highly erroneous in regard to the teeth; and as it regards the representation of the viscera, the plate (xii. fig. 19) is almost wholly incorrect for the alligator, and equally so, it is believed, for the crocodile of the Nile.

"In his *Personal Narrative of Travels*, (vol. vii. 294.) Humboldt says: 'Crocodiles have 38 teeth in the upper jaw, and 30 in the lower$=$68: the fourth tooth *touches* freely the upper jaw. The fourth tooth of the alligator *enters* the upper jaw.' This is an error, noticed in another part of this paper.

"Cuvier, in describing crocodiles and alligators, distinguishes the latter from the former by the teeth, a distinction almost wholly without a difference; for example, one, he says, has 'unequal,' the other 'uneven teeth,' etc. The only important difference to which he alleges [alludes?] is an error of fact as it regards the alligator, namely: that the alligator has 'the fourth tooth below entering into cavities in the upper jaw, and not the interstices of the upper teeth, as in the crocodile.' (*An. King.*) Now, the fourth tooth does not enter into the upper jaw at all, though it and many others enter slightly into the dense, thick membrane of the vault of the mouth.

"In his splendid work on *Odontography*, Mr. Richard Owen (plate 75 A, fig. 1, vol. ii.) represents all of the teeth as conical, except five or six on each side of each jaw, posteriorly, which have the appearance of grinders. One anterior tooth near the tip of the muzzle, on each side of the inferior jaw, is represented as passing quite through, rising considerably above the superior jaw. He describes, in the text, one on each side as penetrating the upper jaw, whereas, in the alligator at least, none even enter, much less pass through the superior maxillary bone. More than half of the teeth of the lower jaw enter more or less into the dense, semi-cartilaginous membrane of the upper. In the bone there are shallow depressions, with slightly separate and very faint indentations, corresponding more or less to about a dozen of the front teeth of the lower jaw; about four or five on each side, the farthest back, rest in indentations, which, however, are barely perceptible; the next three or four are a little more developed, The deepest of these cannot be called holes, much less sockets, being superficial, ill-defined fossæ or depressions within the alveolar arch of both the young and adult.

"I will here add some personal provings of the teeth, without, however, adopting any principle of selection, except size. In an alligator six inches long, I counted 40+38—that is, 40 above and 38 below=78; in another, sixteen and three-quarter inches long, 38+38=76; another 38+40=78; one two feet five inches long, 40+38=78; one of two feet four inches, 34+34=68; one of four feet, 38+34=72; one of four feet five inches, 40+40=80; one of ten feet, 40+40=80; one eleven feet, 40+40=80, etc. Other enumerations might be added, were it necessary. It will be seen that the maximum is 80, the minimum 68, the mean of eight animals 76 25.

"In a perfect specimen of the mummied crocodile from Egypt, measuring four feet eight inches, the jaws being immovably closed, I counted thirty-six teeth in the upper and thirty-two in the lower=sixty-eight. Although these only were visible, yet, from the anatomical conformation, others were doubtlessly concealed by the closed position of the jaws, the dried skin, and the bituminous and other matters used in the mummification. Beginning in the middle of the anterior portion of the under jaw, the first tooth penetrates through the upper jaw. The fourth tooth, the longest of all, does not penetrate the bone of the upper jaw, but compresses or indents it, entering outside of the same, forming a notch, the very thing which some writers have erroneously supposed to characterize the Mississippi crocodile. The transverse diameter from notch to notch is one and five-eighths inches. The diameter of the muzzle, just before this notch, is greater than that through the notch itself, by one-quarter of an inch. In the living animal, the notch doubtlessly appears as a kind of socket in the skin or semi-cartilaginous alveolar gum or membrane. At this point, as also forward and backward, the under teeth retire within the line of those of the upper jaw, never being opposite or in any respect like grinders, as some erroneously represent them.

"The most salient difference between the Nilotic and the Mississippian crocodiles is this slight, but by no means fundamental one, in the teeth, and, strangely enough, the descriptions usually met with intended to fix this differentiation is erroneous in regard to the alligator, as explained elsewhere. 'Nothing,' say MM. Dumeril and Bribon, 'better distinguishes the crocodiles from the alligators than the narrowness of the muzzle behind the nostrils; a narrowness which is produced by the deep notch on each side of the upper mandible, serving for the passage of the fourth lower tooth.'

"Of numerous measurements of the head, etc., I will here give only a few, more or less illustrative of the muzzle: No. 1 is a mummied Nilotic crocodile, four feet eight inches in length; No. 2 the skeleton of a Mississippi crocodile, four feet five inches long, being three inches shorter than the other, and without either dried flesh or skin, No. 1, from the tip of the muzzle to the posterior angles of the orbits, eight and a half inches; No. 2, from ditto to ditto, six and a half inches; No. 1, from tip of the muzzle to the posterior angle of the mouth, nine inches; No. 2, from same to same, seven and three-quarter inches; No. 1, from the angle of jaw to the opposite, over the orbits, five and three-quarter inches; No. 2, from same to same, four and three-quarter inches; No. 1, circumference of head just behind the orbits, fourteen and a half inches; No. 2, from same to same, twelve inches; No. 1, circumference just before the orbits, eleven and a half inches; No. 2, same place, ten inches; No. 1, circumference at the nostrils, five and three-quarter inches; No. 2, same place, five inches. I believe that these measurements differ more than elsewhere in the skeleton.

"The teeth inclose a series of smaller ones, which, it is reasonable to assume, successively replace the outer when the latter are shed, or broken, as they often are, by accident.

"Buffon, who viewed (at a distance) the crocodile and alligator as terrible animals, says 'that travelers, rather than Nature, have made a distinction between them; for, in the general outline and in the nature of these two animals, they are entirely the same.' He alludes to and admits a difference in the teeth: 'The fourth on each side of the lower jaw of the alligator enters a hole in the upper when the mouth is closed,' (*Nat. Hist.*, Eng. ed., vol. iv. p. 60.)

"Mr. Owen says that crocodilians 'have three and sometimes four generations of teeth, sheathed one within the other, in the same socket.' In a number of specimens which I have examined, from the youngest to the adult ages, I have never found more than two well-developed and one rudimentary one in the skeleton. Mr. Owen, in a later work, (*On the Skeleton*, etc.,) says that the processes of succession and displacement are carried on uninterruptedly through the long life of these cold-blooded, carnivorous reptiles.' The man who bought a hawk in order to settle the disputed question, whether its natural term of life reached one hundred years, must have forgot the brevity of his own life. It must be exceedingly difficult, in man's short life, even were crocodiles daily under his observation, to determine how many generations of teeth take place during crocodilian life, which is generally supposed to be very protracted, extending through centuries.

"In an alligator four feet long, which I had vivisected, a large number of the teeth were broken, some had probably been shed, at least they were missing, so that I was obliged to interpolate or guess at the number, as follows: $38+34=72$. I attempted to draw several of the longer teeth with forceps, but failed—the teeth being hollow shells, were crushed to pieces, not having sufficient solidity to permit extraction. I might mention other examples of broken teeth. It is evident that, as the longer teeth are the most finely pointed, and show no marks of having been worn, their use is restricted to prehension and piercing and crushing soft bodies, as fishes, being powerless in grinding down the bony skeletons, heads, limbs, and pelves of large animals so as to fit them for deglutition."

"*Contributions to Teratology; Undescribed Malformation of the Lower Lip occurring in Four Members of one Family.* By J. Jardine Murray, F.R.C.S.E., Brighton.—The object of this paper is to describe a singular malformation of the lower lip which I have found in four members of one family, and which does not seem to have been alluded to by any writer on teratology. I shall describe this malformation, and then consider the various possible explanations which might account for its occurrence. But as other *defects of formation* are manifested among the members of the same family to a remarkable extent, and as I have been afforded every facility for the examination of them, it may in the first place be well to direct attention to the individual peculiarities in the order in which they came under observation.

"In May, 1859, Dr. Thomson, Physician to the Royal Maternity Hospital of Edinburgh, requested me to see J. H., whose parents were anxious that he should immediately undergo an operation for the cure of hare-lip. The little patient was a well-developed and vigorous child, aged eighteen months. The fissure in the lip was confined to the left side,* but extended quite into the nostril; and on this side, also, the anterior part of the hard palate was cleft from want of union between the intermaxillary bone and the left superior maxilla. The intermaxillary bone was twisted on itself, so that the incisor teeth were placed at an angle to the line of their ordinary direction, and partly bridged over the gap in the alveolar ridge. This twisting caused the portion of the alveolar ridge formed by the intermaxillary bone to overlap that portion formed by the inferior maxilla. The little patient had been brought up at the breast, having been able to apply himself to the left nipple only.

"I believe that if the surgeon can choose his own time in hare-lip, he ought either to operate soon after birth, or wait till the child is two or three years old. But in this case there did not appear to be any reason to fear constitutional disturbance from dentition, which had been somewhat irregular. Both parents were extremely anxious that the operation should not be delayed; for the mother was again pregnant, and both she and her husband firmly believed that the daily contemplation of the infant's hare-lip would have such an effect on the mother as to produce a similar malformation in her yet unborn child. With the assistance of my friends Drs. Pow and Messer, I accordingly performed the operation on the 14th of May, 1859. After extracting the incisor teeth, I pared off a small portion of the prominent angle of the alveolar ridge, hæmorrhage from the gum being readily controlled by means of a hot wire. I next dissected the lip from the gum for some little distance on each side of the fissure. Then, having put the lip on the stretch by grasping the angle with catch forceps, I removed a crescentic portion from each margin of the fissure, and brought the edges together by means of two needles of soft steel and two sutures of silver wire. On the fourth day the needles were removed, and the cicatrix protected by a layer of collodion. During the following week the cheeks were supported by a strip of adhesive plaster placed across the face.

"The operation was entirely successful, and afforded the father so much satisfaction that he brought me another of his children, aged three years, who had been born with webbed fingers, and requested me to perform any operation I might think proper for the removal of the deformity.

"On the left hand, the middle and ring fingers were closely united as far as their utmost tips; while, on the right hand, the like fingers were joined together by a web which did not extend much beyond the middle joint. It appeared that the bones and tendons of each finger were perfect, and that two fingers were merely wrapped in a common envelope of skin.

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* "It is worthy of remark, that Nélaton, Chelius, Fergusson, and others, have observed that in cases of single hare-lip the cleft is usually on the left side. 'Vices of formation,' such as hare-lip, are properly instances of arrested development, due in the great majority of cases to insufficient formative power in the embryo; and it has been asserted by Otto and others that the left side of the body is not only more frequently the subject of malformations, but that, being weaker, it is also more prone to disease than the right side."

"This malformation really consists in absence of fission, and is properly an arrest of development; for in the embryo the rudiments of hands and feet do not at first present any division of the fingers and toes.

"I dissected the fingers from each other, and dressed each hand on a Y-shaped splint of gutta-percha, the wrist being bandaged to that portion of the splint corresponding with the stem of the latter, and the middle and ring-fingers being respectively placed on the portions representing its arms. Thus, the undesirable re-formation of the web by cicatrization at the angle of divertication of the fingers, which has such a strong tendency to occur in these cases, was effectually prevented. A month afterward the wounds were entirely healed, the fingers were almost free from stiffness, and the little fellow was using his hands as freely as any child of his age. Neither he nor any of his relatives have webbed toes.

"Being now much interested in the peculiarities of this family, I was permitted to examine each of its members in turn; and I am thus enabled to construct the following table, which exhibits in a very striking manner the hereditary nature of physical malformations:—

Father's mother, aged 65	Palate very narrow and much arched.
Father, aged 41	Double hare-lip. Two sacculi in lower lip.
*Mother, aged 37.	
First child, (girl,) aged 17	Two sacculi in lower lip.
*Second child, (girl,) aged 15+.	
Third child, (girl,) aged 13+	Double hare-lip. Two sacculi in lower lip.
*Fourth child, (girl,) aged 11—.	
Fifth child, (girl,) aged 9+	Palate very narrow and much arched.
[Miscarriage.]	
*Sixth child, (boy,) aged 5.	
Seventh child, (boy,) aged 3	Webbed fingers, both hands.
Eighth child, (boy,) aged 1½	Hare-lip. Two sacculi in lower lip.

"All the individuals alluded to in the above table are free from constitutional disease, and in the enjoyment of excellent health.

"The father was born with double hare-lip, and was operated on by the late Mr. Liston. None of his brothers or sisters were thus affected. His mother's palate is, however, decidedly narrow and unusually arched in formation; and while she was somewhat eagerly accounting for the existence of hare-lip in her son, by the circumstance that, shortly before his birth, she had been frightened by an elephant in Wombwell's menagerie, I was forcibly reminded of Mr. Fergusson's remark that—'Often, while listening to a mother's story about some conjectural cause for her infant's deformity of face, he has thought that a glance at her own features in the looking-glass might have given her a more plausible reason for the condition of her offspring.'†

"In the contracted formation of the palate, the fifth child exactly resembles her paternal grandmother.

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* "The mother is in every respect well formed, and her second, fourth, and sixth children are also quite normal in development. She does not inherit any tendency to malformation such as are found among her children."

† Practical Surgery, p. 584, 1852; p. 564, 1857.

"The seventh child, as already mentioned, was born with the middle and ring finger of each hand closely united by skin.

"The eldest child, aged seventeen, is quite womanly in appearance. She is in every respect well formed, save that in the lower lip there are present two pouches or sacculi, which constitute the interesting congenital peculiarity now to be described.

"The under lip is full and fleshy. About a quarter of an inch from the external edge of the pink mucous membrane of the prolabium are two crescentic openings, exactly similar in appearance and symmetrical in position, one placed on either side of the mesial line. The horns of the crescent are directed forward, and a little outward. A probe inserted into one of these openings passes downward on the inner side of the lip under a considerable thickness of mucous membrane, to the depth of half an inch. Into each pouch a split pea might readily be introduced. The pouches do not communicate with each other; they secrete glairy mucus, and their presence does not occasion any inconvenience.

"Sacculi in every respect precisely similar to these are present in the under-lips of the father of this family, and of his third and eighth children, all of whom were, however, born with the additional malformation of hare-lip.

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"How, then, are we to account for this malformation in the lower lip?

"1. The malformation is evidently not consequent on the occurrence of hare-lip; for although the father and the third and eighth children were born with hare-lip, and also sacculi in the lower lip, the eldest child has the sacculi in the lower lip very large, while her mouth is in every other respect well formed.

"2. The sacculi might possibly be ascribed to the erratic development of tooth-sacs in the under lip. But in all so-called 'freaks of Nature' in the human subject, there appears to be an approximation to the normal condition of some one of the lower divisions of the vertebrate animal kingdom; and I am not aware that true labial teeth are present even among fishes.

"3. The sacculi cannot be ascribed to arrested formation, for in all the four persons in whom they occur there is complete union in the mesial line of the lower lip. And in all mammals, the under lip and lower jaw are developed from two lateral pieces, though the formation is more complex in some reptiles and fishes.

"4. Dr. Ormerod has suggested to me, that the malformation may possibly be explained by some peculiarity in the development of the frænum. The crescentic form of the mouths of the sacculi, and their perfectly symmetrical character, render the suggestion well worthy of consideration. But, in other respects, the formation and position of the sacculi do not appear to accord with this explanation.

"5. Are the sacculi the result of intra-uterine disease of the labial glands? Some considerations favor this view. Surgeons are aware that the labial, like other mucous glands, are frequently the seat of cystic disease. In the Guy's Hospital Reports for 1859, Mr. Birkett has recorded an interesting case of labial cyst, occupying the middle of the prolabium of the lower lip, a little to the left of the mesial line.*

"The peculiarly wide and crescentic openings of the sacculi, however, and the fact that in all four individuals they are so perfectly uniform in appearance and symmetrical in position, seem opposed to such an explanation.

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* Guy's Hospital Reports, third series, vol. v. pp. 266, 267.

"Congenital malformations are sometimes evidently due to disease of the ovum or fœtus, and probably are often to be attributed to the male and female reproductive elements having been affected prior to the act of conception; but assuredly the most common explanation is to be found in impeded or arrested development of the fœtus, from some remote or unknown cause. Now, if we suppose the sacculi to be consequent on intra-uterine disease of the labial glands, it is to be noted that in each of three members of the family which forms the subject of this paper, we have two malformations—one (hare-lip) due to arrest of development, and the other (sacculi in lower lip) caused by intra-uterine disease. But there is ample proof that intra-uterine disease may coexist with arrested development of the fœtus.*

"At my request, Professor Goodsir very carefully examined the sacculi; and, while he concurred with me in thinking them extremely interesting and remarkable, he confessed himself unable to account for their existence. I have since communicated with Professor Owen, Dr. Simpson, Mr. Paget, Mr. Green, Mr. Quekett, and others whom I thought likely to throw light on the subject. But I believe that a careful record of facts and description of appearances will better fulfill the requirements of science than a painstaking advocacy of any one possible explanation of this interesting malformation."—(*Brit. and For. Med.-Chir. Rev., October*, 1860.)

"*A Case of Separation of the entire Alveolar Process of the Upper Jaw.* By Dr. C. GUENTHER. (Varges' Zeitschrift, Band xiv. s. 174.)—A workman, while employed in the construction of a stone bridge, was

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"* Malformations due to arrested development may coexist with malformations caused by intra-uterine disease of the fœtus. In April, 1857, while house-surgeon in the Royal Maternity Hospital of Edinburgh, I delivered a half-witted girl of a monstrous child, presenting malformations of both kinds. As the case is interesting and illustrative, I may be permitted to insert the following extract from my notes:—

"'J. J., aged twenty, has never previously had a child or miscarriage. Labor tedious; after the head and arms had been expelled, the greatly enlarged abdomen of the child remained firmly impacted within the maternal passages, and considerable extractive force had to be employed in order to remove the mass. Patient recovered without a bad symptom. Child still-born, full-grown, female. It is the subject of several malformations. There is what may properly be regarded as a spina-bifida of the occiput, arising from deficiency of the occipital bone. On each hand there is an additional finger, but without any additional metacarpal bone. There is fissure of the soft palate. A fleshy tumor is attached to the margin of the tongue. But the most remarkable feature of this case is the enormous size of the abdomen, caused by cystic disease of the kidneys. Both kidneys are affected in a manner precisely similar, and they are of equal size. The right kidney, being carefully dissected from its position, is found to have its vessels and ureter quite normal in size and appearance. The peritoneal covering and the fibrous coat are readily separated from the uniformly smooth external surface of the organ. This kidney weighed 13℥ 6ʒ 2℈. On making a clear section, the whole substance seems to consist of pearly cysts containing serous fluid. The cysts vary somewhat in size, the average being that of a pea. Other viscera healthy; bladder empty.'

"Whatever the special pathology of these renal cysts may be—and to discuss the subject here would be out of place—there can be no question that they are consequent on intra-uterine disease of the fœtus; and the tumor on the tongue has doubtless a like origin. The spina-bifida of the occiput and the cleft palate are admitted defects of formation. The redundant fingers and the enormously increased growth of the kidneys are also interesting, as they show that defective development of one portion of the body in the fœtus is sometimes accompanied by excess of development or by increased growth of other parts."

struck in the face by the angle of a large mass of stone. He remained senseless, owing to the hæmorrhage, for a quarter of an hour, and three hours later was seen by the author. After clearing out the coagula from the mouth, which almost obstructed respiration, the injury was found chiefly to consist in the complete separation of the alveolar process of the upper jaw, the entire arch, in an unbroken state, lying on the lower jaw, only suspended by some shreds of the gum and soft palate. A wound two inches long opened a passage through the upper lip into the nostril. The displacement was reduced with unexpected ease, and the molars being in good condition, pressure was kept up against them by means of the lower jaw. The incisors were carious, and those of the lower jaw had been driven out by the accident, so that a capacious opening existed, admitting of the removal of the accumulated blood from the mouth and of the administration of semi-fluid food. Owing to the destitute condition of the patient it was difficult to obtain material for effectually securing the motionless state of the jaw by means of bandages. However, so rapidly did the healing process take place, that in seventeen days the man was enabled to commence trying to chew, and on the twentieth day was again at his work; repaying the author's care by neither fee nor thanks."—(*Ibid.*)

Anatomy and Physiology of the Nervous System.—At page 101 of the first volume we gave from the *Pacific Med. and Surg. Journal* a summary of some observations on the intimate structure and functions of the nervous system. A recent number of this periodical contains the following resumé of additional researches on the same subject: "Terminations of nerves on the periphery and *in* the different organs, or peripheric terminations of the nervous system in general, by N. Jacubowitsch.—(*Gaz. Hebdom.*, June 1st, 1860. Acad. Sci., May 7th, 1860.) The author sums up this work as follows:—

"I. Each nerve, of whatever nature it is, originates from a nervous cellule in the central organs of the nervous system, and terminates in the periphery or in the interior of an organ.

"*a.* Either in a nervous cellule and for the nerves of sense in the focus itself [*of the cellule.*—Ed.];

"*b.* Or in the mass of a cellule, in the interior of the organs for the ganglionary nerves; or, finally,

"*c.* In forming a capillary nervous net-work, when the anatomical differences disappear, the axis cylinders passing into each other and becoming confounded together.

"II. The nervous system, central as well as peripheral, forms a whole which, like the sanguineous system, is found throughout the organism, penetrating with its sheaths through the different parts, and arriving thus even to the final elements, without, notwithstanding these almost endless ramifications, becoming lost in a vague and confused manner.

"III. The nervous elements, nervous cellules as well as axis cylinders, are always in process of development, as well in the central organs as at the periphery.

"IV. The part which the nervous cellules play, which are found at the periphery or in the interior organs, varies; they either preside over special functions, like those of all of the organs of the senses, or they serve for the just preservation of the organs themselves, as the nervous cellules of the glandular organs and of the mucous membranes; while the physiological function (properly so called) of the organs depends upon the connection of these nervous cellules with the central parts of the nervous system.

"V. If the anatomical difference disappears in the peripheral capillary nervous net-work from the fact that the axis cylinders are confounded together, it is not the same with the physiological difference which always exists, (the same as we see in the capillary blood-vessels,) and it is probable that its activity may be carried along (*traduise*) by determinate directions of the courant of nervous force with the substance of the nerve (*avec la matiere.*)"

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"*Something new about Gold.*—At a late meeting of the Manchester (England) Geological Society, an interesting paper was read by T. A. Readwin, Esq., on gold discoveries which had been made by him in Merionethshire, Wales, and he exhibited numerous rich specimens of ore taken from it. He stated that Sir R. Murchison had laid it down that 'the most usual position of gold is in veinstones that traverse altered paleozoic slates frequently near their junction with eruptive rocks, whether of igneous or aqueous origin.' This statement was remarkably corroborated by the position of the quartzose vein in Wales, which traversed altered paleozoic slates near the junction of an eruptive bar of porphyritic greenstone. The same law was found to hold good in all the gold-bearing quartzoze veins of Wales. Several shoots and bunches of gold were found in one mine. In one instance, 100 poundsof goldstone yielded 14½ ounces of fine gold. Lately, operations were commenced to mine the quartz upon what is called 'St. David's lode.' Of the rock which had been raised and broken, many stones were found very rich in gold and sulphides of copper, and there was another mineral which had been termed *white metal*, that had been examined by several mineralogists, none of whom knew what it was, an ignorance which was shared in by the members of the association after much examination. Cubes of this white metal were found in cubes of gold, and *vice versa;* and wherever it was found, it was a sure indication that gold was there also.

"Mr. Readwin, in his paper, asserted that at a certain temperature gold would volatilize and escape mechanically, though such was not the general belief. Mr. Atkinson, a member, stated that gold was sublimated from the earth by internal heat."—(*Sci. Amer.*)

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Ranula.—In one of a series of interesting papers on "Anatomy in its Relations with Medicine and Surgery," published in the *Medical and Surgical Reporter*, Dr. D. Hayes Agnew makes the following remarks on this subject: "A tumor is met with beneath the end of the tongue, rising from the floor of the mouth, to which the name *ranula* has been applied. It involves the ducts of the sub-lingual glands, the excretory orifices of which here open. These become obstructed by some substance, either mechanical or inflammatory, the secretion accumulates behind, distending them finally into a semi-transparent tumor. Sometimes they are found to be firm and resisting in the texture. In such cases the distention has provoked an inflammatory exudation and its organization into fibrous tissue. The transparency will depend upon the attenuation of the mucous membrane. This same morbid condition may be present in a very limited degree, confined even to a single duct, so as to resemble a little vesicle. The cure of such can rarely be accomplished by puncture and evacuation of the contents; the wound you make will soon heal, and as the duct or ducts are not restored to a previous condition, the swelling will be reproduced. No treatment short of that which contemplates the destruction of the glandular tissue will prove effectual. This is best attained either by injection or excision; the latter I think the preferable, which is readily done by including the mass within two elliptical incisions, and then allowing the wound to heal by granulation or stitching the edges together with the finest silver wire. If it be a small cyst, after clipping it away, the point of a stick of caustic may be carried into the wound for a moment or so.

"Another tumor is found in this same locality, and which is produced by a salivary calculus becoming arrested near the outlet of the sub-maxillary duct; and, last, another variety of tumor, which I am disposed to believe is rare, and being connected with the under surface of the top of the tongue, rather than the floor of the mouth, must be referred to the cluster of glands there situated. The sides of the tongue may be bound down by cicatricial tissue, so as to interfere with its proper functional movements. Should a nerve filament happen to be included, it may give rise to a very painful condition. This is best remedied by incisions or exsection of the diseased structure."

MISCELLANY.

The Paris correspondent of the *Lancet* states that "in a recent communication to the Academy of Medicine, M. Marchal de Calvi dwelt upon a not uncommon disease of the gums and alveola. This disease, hitherto unnamed, he proposes to call 'expulsive gengivitis,' and as a suggestion of treatment, based upon a series of successful cases, is appended to the essay, I deem it worth mentioning. The affection consists in an inflammation of the gum and of the tooth-socket or its lining, mostly commencing by an abscess, with a subsequent slow inflammatory process. The tooth begins to emerge from its position in the jaw, deviating from the natural direction; the gum recedes, and if the malady be unchecked, the former is completely ejected from its legitimate lodging. The disease is mentioned by English authors, but seems to be, if not unknown, at all events *unnamed* in France, and constitutes the torment and bugbear of many a coquettish middle-aged lady. M. Marchal de Calvi enumerates, as the causes of this unsightly affection:—first, hereditary predisposition; next, exposure to damp and cold, the neglect of cleanliness, and presence of tartar round the gum, dyspepsia, or gastric irritation; and lastly, pregnancy and lactation. The remedy found most successful in cutting short the disease in its early stage, is a *watery* solution of iodine, to be brushed twice daily over the gum; the solution at first to be used weak, and subsequently stronger and stronger, until a concentrated form is tolerated." Appropriate general treatment will also be required in those cases depending upon constitutional derangement.

In the course of a clinical report on epithelial cancer, (*Med. Times and Gaz.*,) Mr. JONATHAN HUTCHINSON treats of cases occurring on the lip, and gives the following statistics on the relative susceptibility of the sexes to this disease, its cause, the part most affected, and the age at which it is most liable to form: "From the statistical analysis of 127 cases of epithelial cancer in the lip given in last week's journal, I was able to show: first, that women are the subjects of this disease in the proportion only of five to every one hundred males; second, that when it does occur in women, it is usually in those who have been accustomed to smoke; third, that the lower lip is affected in ninety per cent. of the cases, the angle of the mouth in six per cent., and the upper lip in only four per cent.; and fourth, that the average age of patients suffering from cancer of the lip is fifty-eight years, the extremes in the series being twenty-eight and eighty-two."

In another part of the same report, Mr. Hutchinson mentions cases connected with dental irritation, and relates the following instance of epithelial cancer of the cheek, induced by the irritation of a broken tooth: "A farm laborer, aged forty-nine, admitted in 1852 into Guy's Hospital, under the care of the late Mr. Bransby Cooper, for cancer of the inside of the cheek. He was a man of very sober habits, and had never smoked. For several years he had a sharp tooth in the lower jaw, which had been liable to prick and irritate the cheek. It often made it bleed. There was no family history of any malignant disease. One year before he first noticed a little spot in the middle of the inside of the left cheek. He did not seek medical advice until the month preceding his admission, when the offending tooth was removed. A firm growth sprung up soon afterward in the socket. The operation of excision was performed on October thirty-first. Three days after the operation erysipelas came on, and the wound gave way. It however healed again; but at the time of the last note there was a rather irritable scab, on a purplish, swollen, and angry-looking surface, and he had a darting pain in it."

In the course of an instructive lecture on sympathetic or eccentric epilepsy, (*ibid.*, October 27,) Dr. Brown-Séquard "gave the details of a case in which the excision of a tumor from the cheek was followed by cure for six months of spasm of the face, which had produced the most terrible suffering. It had been so constant and so distressing as almost entirely to prevent sleep."

In an abstract of the finances of the Royal College of Surgeons of England, (*ibid.*,) it is stated that £909 were received within the last year for dental certificates. The number of those who received these certificates of qualification in dental surgery were, according to the *Lancet*, exactly one hundred.

The Quarterly Journal of Microscopical Science gives the following account from Reichert and Du Bois Reymond's Archives of Anatomy and Physiology, of "A New Reagent for the Exhibition of the Axis Cylinders in Nerves," by Dr. Edward Pfluger: "I believe the fact I am about to state worth publication, as I am not acquainted with any other reagent which, in perfectly fresh nerves, immediately renders the axis cylinder so distinctly visible. My experiment consists in first splitting open the neurilemma with the needle, and then, without the addition of any fluid, in gently spreading out the fibres upon the glass slide. I then immediately place a drop of *collodion* on the preparation, and cover it with the thin glass. Immediately, and in all the fibres, the most beautifully-defined axis cylinders are rendered apparent; the medullary matter assuming a fine, granular aspect."

In the course of an interesting paper, "On Microcephalus considered in its Relations with the Characteristics of the Race," translated from the *Journal de la Physiologie* for the *Journal of Psychological Medicine*, October, 1860, Dr. P. Gratiolet, the author, observes: "The microcephalics which I have studied belong to the category of dwarfs, often very elegant in their forms, which have of late been submitted to the public curiosity perhaps somewhat too freely. As they have nothing at first sight monstrous in their appearance, they have been sometimes put forward as specimens of certain pigmy races hitherto completely unknown. Thus five or six years ago there were exhibited in London and Paris, under the name of Aztecs, from the United States, some small microcephalous dwarfs, evidently the issue of a cross between negroes and Indians; for their curved nose, their tint at once copper-colored and fuliginous, and finally, their crisped hair, revealed a double relationship with the American race and with some black race. Microcephalics, although preserving all the principal characteristics of their race, present, in some respects, a common physiognomy. Their figure is degagé and well proportioned, but their forms are not those of puberty; they recall that of a child of ten or eleven years. Their face is very prominent; their eyes and teeth are relatively enormous; the forehead is extremely retreating, while the occiput is, on the contrary, globulous. Be this as it may, however, the skull, which is singularly reduced in the cerebral, would appear deformed if it were not disguised by a covering of hair much thicker than usual, the mass of hair originally designed for a normal head being concentrated on a smaller space."

In the course of a eulogistic notice of M. Robert's work on Clinical Surgery, the *British and Foreign Medico-Chirurgical Review* for October gives the following summary of one division of his essay "On Fibrous Tumors of the Nasal Fossæ and Pharynx:" "Fibrous 'masses,' (*corps fibreux,*) as he calls them, or as they might perhaps be termed, for the sake of distinction, 'interstitial fibrous tumors,' which are connected almost exclusively with the antrum, but are found in rare cases in other cavities, as the ethmoidal and sphenoidal sinuses. In the diagnosis of this form, M. Robert points out, as facts of great importance, that they expand the bone which covers them, so that it frequently conveys to the hand that peculiar crepitating sensation first pointed out by Dupuytren, and regarded by him as peculiar to bony cysts, and also that they are only found in children and young persons, almost always males, while osteo-sarcoma (by which term he means malignant tumor of the bones) is, according to him, common in old persons. The latter diagnostic sign applies to all forms of fibrous tumor. M. Robert says that he has never seen these interstitial forms of tumor (*corps fibreux*) in a female, and the fibrous polypus only once. Another diagnostic sign is the state of the teeth. In malignant disease they are soon loosened and fall out; in innocent tumors, on the contrary, they long remain fixed in their alveoli. The latter diagnostic signs also apply equally to all forms of innocent fibroid growth, although M. Robert does not make this very plain. In the conclusion of his notice on these *corps fibreux*, he allows (what every one who has studied the subject must have noticed) the difficulty at a late period of distinguishing this form of fibrous tumor from a polypus. The growth, which was at first sessile, has protruded into some cavity, such as the pharynx, and then only the superficial or pedunculated portion of it is seen, which very closely simulates a polypus." * * *

In relation to the treatment, it says: "For the interstitial tumors, or 'corps fibreux,' originating, as they generally do, in the antrum, it will usually be necessary to extirpate the upper jaw. As to this operation itself, he says that he has performed it twelve or thirteen times, and has never lost a patient. Sometimes, however, a less radical method will fulfill the indications, and the floor of the orbit, or the hard palate, may be saved."

In his semi-annual report on micrology, (*ibid.,*) DR. OGLE gives the following resumé of some observations on the structure of nerve fibres: "Turner continues his observations which, along with Lister, he made upon nerve fibres prepared with chromic acid and carmine. Portions of an ordinary spinal nerve, hardened in this acid, then immersed in an ammoniacal solution of carmine, then washed with water, and treated with spirit, turpentine, and Canada balsam, were examined in their entire state. In the various fibres, the axial cylinder was seen deeply tinted by the carmine, and could be traced along the centre of the fibre, occupying its middle third, and presenting a sharply-defined outline. The axial cylinder was in none of the cases seen ramifying into the medullary sheaths, as figured by Stilling; and the author considers that the structures described by Stilling as ramifications of the axial cylinder are nothing more than small fibroid particles of the medullary sheath itself, and quite distinct structurally from the axial cylinder; they never receive the carmine color. Turner also rejects the opinion of Stilling, that a connection of the different fibres in a bundle exists by means of fine elementary tubules; the only intermediate material between the fibres being an extremely delicate, wavy connective tissue, which, though lying between them, does not form a part of the fibres."

The *Med. and Surg. Reporter* thus notices an instance of third dentition: "M. CARRE recently reported at the Societié de Biologie of Paris, the case of a woman, aged eighty-five, in remarkably good health, who, after experiencing some pain in the gum, had a left upper canine tooth to appear. At intervals of some months, the second incisor on the left side of the upper jaw, and the first bicuspids in the upper and lower jaws, on the right side, appeared."

In the report of the Clinic of Jefferson Med. College, (*ibid.*,) MR. N. G. BLAYLOCK records the following case of ranula treated by PROF. GROSS: "The patient, a man twenty-four years of age, had been troubled with a painless tumor under the tongue, of six weeks' standing, and so large as to displace it very much, mechanically obstructing his speech. It consisted of an encysted tumor, called ranula, from its resemblance to a frog's belly, under the tongue, caused by the obstruction of the ducts of the sublingual gland. The accumulated saliva forming a tumor, the more watery portions of which have escaped, leaving a ropy, jelly-like mass. The tumor was laid open, and a portion of its lining membrane was snipped off, allowing the contents to escape. The parts were then brushed over carefully with dilute tincture of iodine, with orders to have it applied again in two or three days, should it become necessary. The object of this procedure was to cause inflammation, with effusion of lymph, and, consequently, obliteration of the sac."

In a paper on the oral region, (*ibid.*,) DR. D. HAYES AGNEW makes the following remarks on some of the abnormal peculiarities of the lips and adjacent parts: "Disease often exhibits a predilection for a particular lip. Thus carcinoma always attacks the nether lip; cancroid or epithelioma may occur on the upper; encysted tumors are seated on the lower lip. The congenital fissures, called hare-lip, involve only the superior lip. These are never in the mesian line of the naso-labial groove. If single it is on one margin, if double on either margin, leaving the groove as a centre piece. The vitality of this must be comparatively low."

The following singular case is reported by DR. C. G. PAGE in the Proc. of the Suffolk District Med. Soc., (*Boston Med. and Surg. Jour.*, Nov. 8): "DR. GARRATT related a case of epilepsy in a man forty to fifty years of age, from New York. He had suffered with his teeth for years; these had been extracted, and artificial ones substituted. He became paralyzed in the muscles of his face and tongue. There was a peculiar drawing of the mouth, from which the aura epileptica came, just previous to the fit; the tongue was inclined to fall back within the mouth; he was fearful of swallowing it. In investigating the case, Dr. Garratt removed the false teeth, and found the soldering discolored; he went back to his dentist, had a rubber plate made, and had no further attack of epilepsy. The paralysis gradually subsided. He had never seen a similar case."

The Chemical News says that "STOELZEL examined a good many specimens of tin foils, and found that all contained from 0·38 to 2·41 per cent. of copper, and from 2·41 to 0·04 per cent. of lead. There were also traces of iron and nickel, which the author regards as impurities. The lead and copper, the author thinks, are useful in increasing the hardness and tenacity of the tin. The lead and copper he found in proportions which seemed to indicate that they in some way replaced one another—the maximum of copper being always found with the minimum of lead, and *vice versa*."

The same journal states that "M. LEVOL, chemist in the French Mint, has found that an addition of a thousandth part of bismuth to pure copper almost entirely destroys its ductility. He discovered this in analyzing some specimens of Australian copper, which, although nearly pure, containing 99·48 of copper, were yet of very inferior quality, owing to the presence of a very small amount of bismuth."

In relation to the preservation of iron and steel from rust by means of zinc, T. DANIELS, of Staten Island, writes to the *Sci. Amer.* that he has thus kept from the effects of the damp sea-air, various articles of utility, such as table cutlery, his gun, etc. He has also employed an oil which, as a lubricator and preservative from rust, excels, he says, anything of the kind he has ever used. He prepares it as follows: "Expose some of the best refined coal oil to a considerable cold, and use the more liquid part which rises to the top, mix with a very little refined castor oil, then some unslacked lime, and, after being shaken well and submitted to a slight degree of heat, filter it."

In the report of the Pro. of the Polytechnic Assoc. of the Amer. Inst., (*Sci. Amer.* Nov. 10,) the following remarks occur on the deterioration of india-rubber: "Mr. Churchill presented an india-rubber toy ball, which appeared perfect till it was pressed, when the surface showed well-defined zigzag and nearly parallel cracks, which seemed to extend to the depth of over an eighth of an inch. On pressing the ball in another direction, a new series of cracks appeared. The ball came from France, and he was inclined to believe that the effect was connected with the use of the chloride of sulphur in the vulcanizing process. Mr. Churchill has experimented much on vulcanizing oils with chloride of sulphur, and had noticed similar effects when too much chloride was used. Mr. Dibben believed that such deterioration might occur in the ordinary process if too high a heat was used. The surface of the rubber is too rapidly vulcanized; its structure then is somewhat similar to unannealed glass."

The relative purity of English and American gold coin is thus given in the same paper. "English gold coin is 22 parts of pure gold to 2 parts of alloy. One thousand pounds of American gold coin contain 900 pounds pure gold, 50 pounds of silver, and 50 of copper. The English coin is the finer."

It is stated (*ibid.*) that "among the recent applications of electro-metallurgy, we may instance the happy idea of Mr. Gaudin in employing it in setting jewels. This is a very delicate and expensive branch of jewelry, and so difficult that the setting of a jewel can seldom be fully relied upon. The inventor first takes a mould in wax of the ornament that is to receive the jewels, then places on it, at the proper points, the jewels, imbedded in the wax to a sufficient depth; the wax model, rendered a conductor of electricity, is placed in the gold solution, and the metal deposited upon it. When the deposit is completed, the jewel is found firmly enchased in the metal, from which, if the process has been properly conducted, it will be impossible for the jewel to escape. The saving of time effected by this process is also very considerable. By the ordinary process, a jeweler can scarcely set 60 jewels in a day, but by the new process, as many as 1500 to 2000."

This plan might prove of practical application in the preparation of plates and setting of teeth.

PROF. BŒTTGER states (*Druggist*) that tarnished silver may be readily cleansed and its color restored in an incredibly short period by electrolysis. "To effect this, a saturated solution of borax in water, or a moderately strong solution of caustic potassa, is brought into a state of active ebullition; and with this the discolored object, laid in a zinc sieve-like vessel, is moistened. If a zinc sieve be not at hand, we may attain the same end by touching the object, when it has been dipped in the boiling fluid, with a zinc rod."

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The Pocket Anatomist, being a Complete Description of the Anatomy of the Human Body, for the use of Students. BY M. W. HILLES, formerly Lecturer on Anatomy and Physiology at the Westminster Hospital School of Medicine, etc. Philadelphia: Lindsay & Blakiston, 1860. This is one of those useful little manuals which are so much employed at the present time to facilitate the acquisition, and aid in the retention of a knowledge of important branches of science. It seems to be well adapted to the wants of the student of anatomy.

The Physician's Pocket Memorandum for 1861. BY C. H. CLEAVELAND, M.D., Cincinnati. Like other publications of the kind, this work is so arranged as to enable the practicing physician to keep accurate records of professional visits and accounts. It contains a classification of medicines, and affords useful information upon other subjects of interest, which may render its possession more desirable to those who require an aid to memory in the emergencies of practice.

American Journal of Indigenous Materia Medica and Repertory of Medical Science. Conducted by B. KEITH, M.D. This is a new monthly of thirty-two pages octavo, ostensibly and chiefly devoted to the cultivation of indigenous materia medica, though its pages are somewhat freely occupied with matter foreign to this subject. The importance of a knowledge of the medicinal plants and materials of this country is, however, so great, that we regard with favor every movement which tends to augment it and further develop our resources for the treatment of disease. As, therefore, special effort in this direction cannot fail to prove useful, by increasing our information upon a very important branch of medical science, every enterprise for such purpose is worthy of commendation and encouragement. This periodical is published by B. Keith & Co., No. 41 Liberty Street, New York, at one dollar per annum.

THE
DENTAL COSMOS.
NEW SERIES.

VOL. II. PHILADELPHIA, JANUARY, 1861. No. 6.

ORIGINAL COMMUNICATIONS.

PRACTICAL HINTS.

BY J. D. WHITE.

WE cannot help referring again to the *everlasting "nerve cases."* For over twenty-three years we have been investigating this difficult and perplexing subject, and sometimes we almost come to the conclusion that we know nothing about it, and yet, in a few minutes we are called on to exercise our judgment and skill, or experience, in treating some poor sufferer with a nerve case, and instead of *going it blind* we recall our former practice, and principles on which it has been based, with a view to afford the most speedy and effectual relief. When we read over the various articles on treating those cases, and the discussions before conventions and societies, we arrive at the conclusion, from what has been said, that the pulp of the tooth is the most *accommodating* tissue in the human body to treat, when it is the subject of trouble or disease. The treatment of nerve cases gives us more trouble, makes more disturbance to our regular set appointments than anything else connected with our profession. An hour set in advance, for three or four weeks, for a special operation, is perhaps entirely absorbed by unexpected calls of persons suffering from toothache. What is to be done? The one who has set the hour feels that it belongs to him in spite of another's pain, and the one in pain regards it as unfeeling that the operator and the previously-engaged patient do not at once yield to his immediate wants. It is of daily occurrence that from one to three hours is absorbed in this way, and very often we cannot attend to all who need our services. The difficulty does not end by the first visit that a single case requires; its treatment entails attention at short intervals, inside of previous appointments; we have often attempted to make allowance, in advance, for the accommodation of such cases, but the irregularity of their occurrence renders such precaution, to a great extent, impossible.

Perhaps all readers of dental journals are aware that our settled practice has long since been to destroy a nerve when exposed, preparatory to plugging a tooth, and waiting until all irritability of parts subside, if any attends it before introducing the filling. Strictly observing this line of practice, very little trouble ensues to complain of; it is where we have plugged a tooth when there was slight exposure of the pulp at the time unobserved, or where the pulp was nearly exposed and in time became morbid and took an inflammatory action, and the patient returns to us in suffering at an incônvenient and unexpected time; this has always occurred to us, and perhaps always will; we know of no way to wholly guard against it. But this trouble is nothing to compare to the number of patients who are at all times calling, in suffering from cases which have been plugged over nerves, with a view on the part of the operator, to save the nerves "alive." We do not make this statement to complain of any other operator's mode of practice, or to extol our own, but to tell the facts as they occur in practice, and to show, notwithstanding the statements made by many, that attempting to save the nerve alive, if it does not give the operator trouble, it does give it to some one else, or to the patient. The treatment of an inflamed nerve, or in many cases even of the apex of a root, by leeching, cold applications, purges, chloroform, etc., *with a plug in the tooth,* is too absurd, weak, and unwise to need comment. We have seen too much of it to tamper with it for a moment. It is true that where there is general febrile action in a prolonged case of suffering, systematic treatment is indicated, and may be resorted to with advantage; but to let a patient lie in bed and undergo all sorts of treatment and suffering for a week or two, under a *scientific, systemic* treatment, with a plug over an exposed or inflamed pulp or incipient abscess, is *not dentistry.* We have already given a list of sixty-five cases treated some time since, after they had been filled over the nerves, occurring in the short space of thirty-five days; but for illustration we will give a history of a few more. A young man, over twenty years of age, called to consult us about his teeth early last summer; he had been suffering three weeks; we discovered that two bicuspids and a first molar had been plugged over the nerves; the plugs were removed, two of the nerves were dead and one was living; the nerve cavities were not plugged; he had called on his dentist several times to obtain relief, but was each time informed that the nerves had been killed and nothing more could be done. The nerves may have been destroyed in two, but their cavities had not been opened. We know that his dentist heretofore opposed the destruction of nerves. In a short time (two weeks) the teeth were treated and plugged, and the patient has thus far been comfortable. The teeth were of a reddish hue when we first saw them, but before they were plugged they regained their natural color. This dentist had attended to this patient's teeth from his boyhood, but never had nerves to treat before; and he remarked, when he had been restored to comfort, that he "never before discovered the difference between an *ingenious* and a *scientific* dentist." We could not help thinking that the remark had considerable force in it, for it has occurred to us many times that there is more ingenuity than science in attempting to save an exposed nerve alive. We are prepared to meet the rebuke of many well-meaning and intelligent operators, who differ with us, for making these remarks, but it must be admitted that we have gone through with all the present usual processes of palliative treatment long ago, and before we adopted a course of *the radical process.*

Entered, according to Act of Congress, in the year 1860, by Jones & White, in the Clerk's Office of the District Court for the Eastern District of Pennsylvania.

TREATISE UPON THE GENESIS AND DEVELOPMENT OF THE DENTAL FOLLICLES TO THE EPOCH OF THE ERUPTION OF THE TEETH.

BY DRS. CH. ROBIN AND E. MAGITOT.

[Translated for the Dental Cosmos, from the "*Journal de la Physiologie de l'Homme et des Animaux,*" Dr. E. Brown-Séquard, editor, by E. Sureau.]

II. The Mucous Membrane.

When we examine the bed of soft parts which covers the alveolar edge of the jaw, we find first a plate of mosaic-like epithelium more or less developed. This plate has considerable thickness in the ruminating animals, (pl. I. fig. 4, *g*,) where it alone is as thick as the subjacent soft parts, which separate it from the maxillary. The cells composing this epithelium are very distinctly pavimentous, and their volume is less in the neighborhood of the mucous membrane than on the free surface. In man this epithelial bed is much thinner, and is easily detached from the subjacent tissue; while in the herbivora it is more adherent—in both the cells of the inner part are more difficult to distinguish than those of the superficial portion, yet it is always possible to determine the point of union between the epithelium and the mucous membrane. The precise point of junction of these two tissues is clearly indicated by a line in the preparations seen by transmitted light; the refracting power of these tissues is elsewhere very different, and their differences of texture can be already appreciated when but very slightly magnified, (pl. I. fig. 5, *k*.) The clearness of the distinction that we are about to establish is already observed in the period of development preceding the appearance of the follicles.

Beneath the epithelial bed is a band of quite thin tissue, which trenches by its density and opacity upon the subjacent beds, with which it is, however, in fibrous and vascular continuity. This band should be considered as the mucous membrane, properly so called. It is of a grayish color, and microscopic examination exhibits a fibrous texture; it in fact reveals bundles of laminated fibres, of a compact texture, immediately contiguous, or very near each other. It is very resistant and tenacious, although very flexible, and it is easy to see in the fresh embryos that it possesses great vascularity.

Near the period of the appearance of the follicles, either before or after, according to the species of animal, we begin to perceive the papillæ of the mucous membrane, in the shape of small conical or hemispherical projections. They are on the surface of the web of the mucous membrane, extending into the epidermis which covers it; but the surface of the latter does not reproduce the form nor the projections. At the lower face of the chorion of the mucous membrane the salivary glandules appear in the form of short *culs-de-sac*, projecting into the submucous tissue, which we are about to describe. They are not found at the level of the groove, but a little from it, before and behind; this fact is always observed when we separate a certain length of its tissue on removing the follicles. The mucous membrane gives a brilliant and glossy appearance to the free or dental edge of the jaws, which is thick and cylindroidal at the surface.*

In cutting this membrane we perceive, one after another, the differences of appearance that distinguish it from the soft, almost gelatinous tissue, described later, which is placed below it and fills the groove. It can be separated, by careful dissection, without injuring even the subjacent follicles when they already exist. When the operator reaches the free edges of the maxillary laminæ of the groove, or a little below them, he finds the mucous membrane adhering to the periosteum which covers its external face; the mucous membrane cannot be separated from it, and drags it away with itself. It is at a much later period, about the fifth or sixth month of the intra-uterine life in man, and at a corresponding period in the other mammifera, that the follicles adhere so strongly to the mucous membrane that they cannot be separated without dissection, and induce later a slight depression of that membrane at their level.†

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* At the period of which we have spoken in the first place, and which is the time when the follicles make their appearance, we see only the so-called *primitive dental groove* of the mucous membrane of the free and thick edge of the jaws, at the bottom of which, according to Goodsir, (1838,) commence the projections or papillæ, the germs of the teeth. This error, notwithstanding its evidence, is still repeated in many of the more recent works. It is useless to remark that this mistaken groove of Goodsir bears no analogy to the osseous *dental groove* described above.

† It is these depressions which have been taken for the orifices of the gingival canaliculi communicating with the follicles of the teeth. (Hérissant, 1745, who had formerly, but wrongly, admitted that the membrane of the follicle was a continuation or fold of the mucous membrane of the gums; Bonn, 1773; Oudet, 1835; and others.) This hypothesis was overturned by the observations of Raschkow,

III. The Submucous Gingival Tissue of the Fœtus, or the Contents of the Dental Groove.

Below the dissectable mucous membrane described above there is a thick bed, formed of a tissue compact in texture, and covered with a mosaic-like epithelium ; this tissue is soft, almost sticking or stringing between the fingers, and of a more or less reddish, gelatiniform appearance.* This tissue (pl. I. figs. 1 and 5, *h*) is in continuity of substance with the mucous membrane, and extends to the bottom of the groove of the maxillaries, where it moulds itself, while filling it exactly through its whole extent. It is in

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(1835,) but reasserted and developed since by Goodsir, (1838,) and at last refuted recently by M. Guillot. It is known that an increased thickness, of a whitish-gray color, is developed at the expense of the mucous membrane, at the line which is occupied by the teeth after their issue. This thicker part rises in a projection or sharp crest, and from space to space on its free edge there are small depressions or incisures, which give it a slightly denticulated appearance. At the base, along the concave or posterior edge of the gum, it shows a fold which follows the posterior edge of the dental groove, and marks the line where the gingival mucous membrane extends itself with the buccal mucous membrane, properly so called, thinner, and more rosy. The preceding hypotheses have exaggerated the importance of this furrow, which has little depth, and is interrupted and crossed from space to space by the projections of the mucous membrane, which extends along the base of the gingival crest. This furrow vanishes little by little in company with the crest, and in the same proportion as the edge of the jaws is rounded and broadened by the growth of the follicles. At no period does it show orifices traversing the mucous membrane, not even when it is reduced to a series of depressions. The gingival crest has been for a long time called the *dental cartilage*, (*cartilago dentalis*,) and has been considered as really formed of cartilaginous tissue. It is, however, only composed of fibrous, vascular tissue, covered with a thick bed of mosaic-like epithelium. Near the level of each canine there is a membranous projection, in the form of an ear; it is more distinct below than above, and more upon certain subjects than on others; these projections occur in both jaws, or occasionally only in the lower one. This auricle disappears about the third or fourth month after birth. When it is well developed, its form is curious—it is depressed toward the middle, where it often shows two or three papillary projections that are visible under the microscope; they are also occasionally found at its anterior extremity. It, as well as its papillary projections, has a remarkable vascular richness. In the lower jaw the right auricle is usually connected with the one on the left by a membranous border, which rises above the sharp edge of the gingival crest. This border is from one to three millimetres in height, less projecting than the auricles, but vascular also, and having some microscopic papillary projections near the auricles. In this way it forms in the lower jaw a kind of small, thin lip, extending from the level of one canine to the other; without doubt it assists in suction, and in consequence of its vascularity it must assume a kind of erection.

* No description of this tissue has yet been given, or at least with but little exactness. Henle confines himself to saying that the follicles are separated merely by a soft substance that strings between the fingers. (*General Anat.*) M. Guillot, who has noticed it in some hard, preserved sections, does not distinguish the chorion or

immediate contact with the osseous tissues of the walls of the latter. It rests upon them in some measure at the bottom of the grooves only, and as far as the ulterior development does not occasion the formation of the partition which separates the dental nerves and vessels from the follicles.

This tissue is composed of fibres and bundles of laminated fibres, very loosely united and intercrossed by vessels. These elements contain a considerable quantity of very pale and very slightly granulated amorphous matter in their straggling meshes. This peculiarity gives this tissue great transparency, and the observer can follow with great facility those capillary vessels which cross to the common fasciculus of the nerves and vessels of the jaw. In the depth of the mucous membrane, as in that of the submucous tissue, there are a great number of embryoplastic nuclei, especially visible after the employment of acetic acid. These nuclei are much more easily observed and isolated in the submucous tissue, on account of its transparency. As to its thickness, it diminishes in the proportion that the follicular evolution advances; so that at birth, for example, when the follicle is well developed, the submucous tissue, which we may say has served for its formation, has disappeared almost entirely. There is, however, a certain portion left, which can be found under the gum wherever the follicles are not united to it; so that the mucous membrane, like all the rest, remains constituted by its chorion, or derma of the mucous membrane, and its submucous tissue.*

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web even of the mucous membrane of this tissue, and gives the epidermis as being the entire mucous membrane. He is wrong in saying that this tissue is at first composed of a very compact and condensed mass of cells or nucleiform molecules, similar to those from which the bone and periosteum arise, for the reason that it becomes fibrous. He does not decide, either in one way or another, the question whether this part is or is not a periosteum of depth or of modified forms. He is incorrect in saying that it is difficult to determine its limits exactly. He calls it the *odontogenic part*, or the *generating part* of the teeth, and also the *odontogene*—(Recherches sur la Genèse et l'Évolution des Dents et des Machoires; *Annales des Sciences Naturelles*, Paris, 1859, 8vo., vol. ix. pp. 282–288)—but it is not here a peculiar kind of tissue.

* The tissue, which fills the dental groove at the time of the genesis of the follicles, and for a considerable time afterward, has the same characteristics of anatomical composition and texture as are found in the subcutaneous tissue, where the pilous bulbs originate, and in the submucous tissue of the lips and other parts of the body where the glands originate, as the follicles do in the former. It is, therefore, not a peculiar species of tissue, and it consequently has no more title to a particular name from the solitary fact that it fills the maxillary groove, than the submucous and subcutaneous laminated tissues have from the fact that the pilous follicles and glands originate in them before they emerge upon the exterior through the integuments. At the same time that the follicles are developed, the fibro-plastic bodies of the submucous tissue change to the condition of laminated fibres, properly so called; it becomes more dense, whitish, less transparent, and is without elastic fibres. It adheres more strongly to the walls of the groove and the alveoli than it did before, so that a little while before birth it forms a real periosteum for them, which is found

The dental follicles and bulbs originate in this tissue, near the vessels and nerves above mentioned, and, consequently, not far from the bottom of the groove. This tissue diminishes gradually in quantity when the follicles are developing; when the roots of the teeth have appeared, their crowns slowly issue from the bottom of the groove; at the same time the osseous partitions, which spring from the thickness of the internal face of the walls of the latter, are formed between the teeth and their roots; the result is, that the groove disappears as a groove, although it continues to lengthen and even to broaden as a canal. It is closed in this manner at the bottom, and remains merely in the form of a dental canal. From that time there is a gradual diminution of quantity in the submucous tissue, which becomes atrophied before the osseous invasion.

Finally, the groove diminishes in proportion as the follicles become developed, and as they gradually fill the groove and the cells into which it is subdivided.

As we are now acquainted with all the organs and tissues which are in connection with the follicles and teeth at the time of their origin and during their development, we may enter upon the study of these phenomena, which are so important and so difficult to follow.

(To be continued.)

CASE OF SUPPOSED CANCER SPEEDILY CURED.

BY J. L. SUESSEROTT, D.D.S.

While visiting a large eleemosynary institution in this State, a few years since, my attention was directed to a case, a short history of which may be interesting to the student and dentist. An old lady, an inmate of the house, had been suffering from a large ulcer on the inside of the lower lip, which had continued for so great a length of time that the edges had become greatly indurated and thickened from the deposit of lymph. The exciting cause, the protruding apices of the roots of the central lower incisors, had escaped the notice of the attending physician, a gentleman of acknowledged ability in his profession, because of the coating of tartar, which rendered their appearance very similar to that of the ulcer. Considering the diseased condition to be malignant in its

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immediately under the bone when the follicles are dissected by the removal of the laminæ of the maxillary bones. At birth, and for some months after, it does not adhere very much to the proper wall of the follicle, so that the whole of the latter can be detached from it. It forms in some degree a second coat or whitish wall, more resisting, less transparent, and less vascular than the proper wall, which is truly simple. Later, this periosteum (the remnant of the submucous tissue immersed in the groove) unites with the follicular wall, and, combined with it, forms the alveolo-dental periosteum.

character, palliative remedies alone were used, and the case was referred to me as one for which there was no relief. Prompted by a desire to benefit the patient, and at the same time demonstrate the advantage of a dental education, I was induced to commit the unprofessional act of operating before an invitation was extended. No regular instrument being at hand, I called for a table fork, and, in a much shorter time than the writing of this has consumed, I relieved the greatly-distressed patient of a disease which she had expected would very soon terminate her existence. Nearly all of the alveolar margin having been absorbed, by placing a prong of the fork under the protruding lower end of the root, the operation of evulsion was readily performed; and by the removal of that which had become a foreign substance, the diseased condition of the lip, as well as all the surrounding parts, was speedily removed.

As this is not an isolated case, it would be well for the cause of humanity were the dentist more frequently called in consultation; the diseases of the teeth and their surroundings being his special province, many morbid changes which too often escape the notice of the physician, or are considered by him of minor importance, might be detected, and disastrous results prevented. An interchange of ideas would also be productive of great benefit to the votaries of each profession, and a desire for mutual improvement would soon be engendered in the mind of all, with the exception of that miserable few who cannot discover any strength in their profession outside of the possession of secret methods, and who stultify themselves into the belief that anything that they cannot perform had better not be attempted by another.

December 25th, 1860.

A CASE TO DIAGNOSE.

BY WM. A. PEASE.

Early in the morning of November ninth, Miss M. sent her carriage to my office to bring me to her house, to treat an ulcerated tooth. The messenger said her face was badly swollen, she had been up all night, and she wished me to accompany him and to lance the gum. After making the necessary inquiries, I took my pocket-case of medicines and such instruments as I thought I would require. Arrived at the house, I found her nervous and restless, her face considerably swollen, and she was suffering from pain. She said she wished me to extract the tooth, for which I was unprepared; having no forceps with me. And here I will remark, when called to leave the office, I seldom receive a description of the case sufficiently intelligible to enable me to go properly prepared to meet it. After conversing with her a few minutes, I proceeded to make the necessary examination. There was some infiltration of the lip, but the point of greatest swelling was on a line with, to the left, and above the left ala nasi. The fullness extended out on to the cheek, and upward as far as the floor of the orbit; and there was considerable induration a little external to and above the ala nasi, corresponding with the termination of the fang of the left cuspidatus; no fluctuation. Raising the lip, there was no swelling of the gum; but I could just feel the edge of the induration above the junction of the lip and gum, in the space between the lateral incisor and the eye tooth; no evidence of pus that could be reached with a lancet; the palatine arch normal. The tooth that was the most implicated, and that seemed to have produced the disturbance, was the left superior lateral incisor. It was much elongated from periosteal inflammation or accumulated pus; very loose in the socket, and very sore; had been plugged about ten years in both the anterior and posterior approximal sides; plugs good, no discoloration visible either by direct or transmitted light, that indicated a dead nerve. The left superior cuspidatus was slightly sore from sympathy, and the left superior central incisor (a pivot tooth of four years standing) was also slightly sore, but not loose in the socket or elongated; pressure or raps on it with an instrument did not occasion pain or more irritation than they did on the canine tooth. She could bite on it without difficulty; she said it gave her no trouble now, and never had; but she could not bear to have the lateral incisor touched, or to touch it herself. About three months since, during my absence, she had suffered from a similar swelling, and had it lanced by a physician; it was opened in the space between the lateral incisor and cuspidatus.

After this history and examination, I concluded that the nerve was dead in the left superior lateral incisor, although the pivot tooth was viewed with distrust; but every test I could devise failed to show that it was more than secondarily implicated. My plan was to open the canal of the lateral incisor, clean it, reduce the periostitis, and plug the tooth and fang at the proper time. To this end, I removed the pivot tooth, which was very firmly set, in order to gain access to the plug in the lateral incisor. The pivot came away as dry as pivots usually are, and there was no more offensive odor or escape of gas from the canal than is usual in healthy pivot teeth. A broach passed up into the canal as far as it would go, failed to show that the tooth was the primary cause of the swelling, or that it was more than sympathetically affected, and that but slightly.

Thus fortified in my diagnosis, I removed the anterior approximal plug from the lateral incisor, which occasioned severe pain. With a small drill I attempted to open the nerve canal, but it occasioned so much pain I was forced to desist; proceeding again, she complained that I hurt her very much, that I touched the nerve. I placed the point of the instrument in another part of the cavity, and proceeded as before to see if there was local sensation; and, although painful, it was more bearable and of another kind—that arising from touch or pressure on a sore tooth. Slipping the instrument cautiously into the other place, she again asserted that I was touching the nerve, and I soon became satisfied that there was local sensibility, and consequently a live nerve. Here was a dilemma. Returning to the fang on which the pivot tooth had been inserted, I re-examined it with care, probed it with broaches, but to no purpose; I interrogated it in vain. The eye tooth, although plugged, gave an innocent response ; it sympathized, but nothing more. Returning again to the fang of the pivot tooth, I selected a broach that I had fashioned like a pod auger, and commenced drilling; after considerable labor, I either enlarged the passage at the foramen or drilled through the fang, and had the satisfaction to see a free discharge of pus; after which the lateral incisor settled back to its place, and, to use her expression, it became as firm and short as it ever was; the trouble was at an end. I then examined the fang to see if the evacuation had made any visible or appreciable change in it; but it was just the same as before—neither shorter nor firmer in the socket. Now the question arises, why should the fang, which was evidently the *causas morbi*, suspected from the first, wear such an innocent expression, and utterly fail to give any but a negative response to my interrogation? Was the cause anatomical? Even if there was a crook in the fang, it would not offer sufficient mechanical resistance to the inflamed periosteum, or to the pressure of confined and accumulating pus, as to prevent all external evidence of periostitis; besides, there was no tumefaction or induration over the fang. All the intra-osseous and subtegumentary disturbance, so far as externally visible, were located over, or rather between, the lateral incisor and the cuspidatus. The point of induration, which became softened after the evacuation of the pus, was above and to the left of the ala nasi, very nearly over the end of the fang of the eye tooth; and yet that tooth, notwithstanding its root extended very nearly into the seeming focus of the disease, suffered very little.

Whatever was the original cause of this perforation by the pus from socket to socket is now difficult to determine, and it is only important as an exceptional case, or an aid to diagnosis. Had not Miss M. been a lady who valued her teeth, and had I not been sincerely desirous to save this one for her, I might have extracted it under the discouraging circumstances; there would then have been a flow of pus from the socket, the urgent symptoms would have disappeared, and, unless I had split open the tooth, I should have supposed that it was the offending member, and that the nerve had died from the irritation of a plug.

THE RATIONALE OF THE ADMINISTRATION OF MERCURIALS.

BY JOHN C. K. CROOKS, M.D.

The precise method in which mercurials act as remedial agents has until quite recently been comparatively misunderstood. Writers upon materia medica, therapeutics, etc., have widely differed in their notions; while practitioners of medicine have administered this valuable class of remedies with indications often in direct antagonism. Cullen sets down the action of mercurials as "stimulant," "diuretic," "aperient," and "deobstruent." Armstrong, as medicines "equalizing the circulation." Hooper, as having "two effects:" "one, as a stimulus on the constitution and particular parts; the other, as a specific on a diseased action of the whole body, or of parts;" adding, as an evidence of the ignorance of its precise effects, that "the latter action can only be computed by the *disease disappearing*." Eberle, as "producing a new disease," "equalizing the circulation," "revulsive," "evacuant," etc. Wood and Bache, as "purgative," "alterative," "sialagogue," and "sedative." While Drs. Murray and Chapman, approaching more nearly to a correct perception of their true operation, class them among the *tonics*.

This multiplicity of testimony, even from authors of a recent day, it will be discovered, comes wide of a *rational* explanation of the *modus operandi* of those remedies, which have gained such a deservedly exalted reputation as reliable combatants of disease. Yet, notwithstanding this evidence of what mercurials *can do*—this record of *effects*, they have all along been operating upon the human organism, in health and disease, with unerring uniformity. With the intelligent practitioner, some form of mercury has come to be considered the sheet-anchor in acute inflammations, particularly of serous and fibrous tissues. Popular prejudice *will not do* with the man who has the well-being of his patient at heart, and properly appreciates the value of this great *anti*-phlogistic remedy. When "this trembling house of clay" is invaded by such a grave disease as an acute inflammation of one of the vital organs, blood-letting, antimony, opium, etc. may come in for their share of the triumph; but the king who can *rule* the conflict, meet the indication *best*, is mercury. This experience has taught us to be the case. Intelligently administered—given at the proper time and under proper circumstances—aided when aid is necessary, it never disappoints.

This being true, it is my object to point out the *rationale* of a class of remedies so invaluable, and yet so destructive, under certain circumstances, to those organs which it is the aim of the conservative dentist to preserve. In doing so I shall not claim to say anything *new*, (for I believe the field has been pretty well explored before me,) yet a new *version* of the story may not be entirely unacceptable.

To make my subject clearly understood, I must first be allowed to consider briefly the two pathological conditions—congestion and inflammation. In performing this task, we must bear in mind the circulatory system, and with it the constituent elements of the blood—its rough anatomy, rather than its chemistry. In the investigations of microscopists, it has been ascertained that there are two "stages" in every case of active congestion : the stage of "incubation," and the stage of "actual development;" while in inflammation there are three: the stage of "incubation," "active congestion," and lastly, (as in active congestion,) the stage of "actual development," or that pathological condition *known as inflammation.*

To illustrate: let the web of a frog's foot be wounded while under the field of the microscope, and as the first result, there will follow an irregular circulation of the blood in the capillaries, which is neither congestion nor inflammation, but the *immediate* effects of the injury: probably upon the nerves of the part, and so through them upon the capillary vessels. This over—this *irregularity*—and there follows a short period in which everything goes on in a normal manner, without any evidence of the violence done to the parts. This is termed the period of "incubation." Then comes "active congestion," evinced by an increased afflux of blood—with an acceleration of its velocity,—by the distention and *tensity* of the vessels, the interruption of the secretion and absorption of lymph, the apparent agglutination of the blood-globules into masses, and tumefaction of the parenchyma of the web. This condition of things goes on increasing till inflammation is developed by *the loss of capillary power,* (contractility,) and the consequent dilation of these vessels, and from dilation the establishment of "*points of stagnation*" in the current of blood. Here, then, we get the morbid changes upon which active congestion and inflammation depend; the former consisting in an *increased flow of blood to the part,* with the consequences of such determination as already enumerated; while the latter consists in the *dilatation of the capillaries from loss of capillary powers,* and the formation of "*points of stagnation.*"

To the inquiring physician this revelation of the microscope is pregnant with meaning, and, if not already correct, must produce a revolution in all his notions of inflammation—cause him effectually to abandon the idea that this pathological state is "increased *activity of the circulation.*" He thus revises his pathology ; but, having seen the efficacy of mercurials, he does not throw them away for something imaginary and untried, to meet this new indication. No ! But he studies anew and understandingly the manner of their operation, and sees at once that where he formerly gave mercury as a "revulsive," "to equalize the circulation," as a "stimulant," an "evacuant," etc., he now administers it to meet that important indication—the *restoration of the* TONE *of the capillaries.* Reviewing the series of changes which make up inflammation—the order of sequence—he discovers that the first step to be taken is to restore capillary power. Venesection, he has been taught, will often do it. Antimony, he has learned, will frequently accomplish the end. Yet *experience* has shown him that, after blood has been drawn and antimony given till the *volume* of the circulation is reduced to a fearful extent, still that evidence of recuperation in the strength of the capillaries, so anxiously looked for, does not follow. In other words, the lancet has been used to *empty* the dilated capillaries, that *nature* might take advantage of the circumstances and come to the rescue. But nature is worn out; there has been too great a conflict; more *assistance* must be given, and mercury *completes the work*—completes it when *nothing else will.* If mercury is able to do this, how can we account for its action, save to point at what it *invariably accomplishes*, when it is able to accomplish anything—namely, to RESTORE CAPILLARY POWER?

Such undoubtedly *is* the specific action of mercurials; and, keeping this principle in view, there will be a wonderful clearing up of many of the apparent inconsistencies, incongruities, and mysteries of their operation. Their "alterative" effect in chronic inflammations is immediately revealed. They correct the unhealthy state of the capillaries by causing them to contract upon their contents. As a promoter of absorption it is seen to be by their power to lessen the calibre of the capillaries—diminishing the flow of blood to a part, and thus literally *starving*, (like tying the carotid artery for tumor of the antrum,) instead of giving energy to the absorbents. This specific effect, as we have seen, is upon the systemic circulation; yet it appears to be more powerful in that portion confined to the salivary glands and the mucous lining of the mouth. Here the *intensity* of the contractility excited is followed by a *loss* of tone, and a consequent relaxation and distention of the vessels—or inflammation; just as in chilblain, where excessive cold produces contraction to such an extent that a loss of capillary power is effected, and inflammation ensues. And here I might speak of the *effects* of cold upon the system when it is under the influence of mercurials, as further evidence in support of the doctrine given. That *cold* causes the capillaries to contract, no one will deny; still such contraction, carried to a moderate extent, as under ordinary circumstances, *except* in an individual *mercurialized*, is productive of no unpleasant consequences. But when mercury has already *produced* contraction, the application of another agent, which has the power to contract the vessel still more, is followed by inflammation in the more susceptible tissues: in the *fibrous*, producing *rheumatism;* in the mouth, (from drinking ice water, for instance,) mercurial stomatitis, etc.

Thus I have endeavored, as briefly as possible, to give the rationale of the operation of mercurials, together with an explanation of some of the phenomena attending their administration. To go into further details would not be profitable in an article of this character. However, to such as may desire to pursue the investigation, I would most earnestly recommend the perusal, ay, *study* of "Billing's Principles of Medicine," a work *replete* with useful knowledge, both to the dentist and the practitioner of medicine.

Middleburg, Va., Dec. 15, 1860.

EXPLOSION OF TEETH WITH AUDIBLE REPORT.

BY W. H. ATKINSON.

Case 1.—Rev. D. A., Springfield, Mercer County, Pa., August 31st and September 1st, 1817. At nine o'clock A.M. of August thirty-first, the right superior canine or first bicuspid commenced aching, increasing in intensity to such a degree as to set him wild. During his agonies he ran about here and there, in the vain endeavor to obtain some respite; at one time boring his head on the ground like an enraged animal, at another poking it under the corner of the fence, and again going to the spring and plunging his head to the bottom in the cold water; which so alarmed his family that they led him to the cabin and did all in their power to compose him. But all proved unavailing, till, at nine o'clock the next morning, as he was walking the floor in wild delirium, all at once a sharp crack, like a pistol shot, bursting his tooth to fragments, gave him instant relief. At this moment he turned to his wife, and said, "My pain is all gone." He went to bed, and slept soundly all that day and most of the succeeding night; after which he was rational and well. He is living at this present time, and has vivid recollection of the distressing incident.

Case 2.—Mrs. Letitia D., Vernon, Mercer County, Pa., 1830. This case cannot be so clearly or fully traced as case first, but was much like it, terminating by bursting with report, giving immediate relief. The tooth subsequently crumbled to pieces; it was a superior molar.

Case 3.—Mrs. Anna P. A., Hemphill, Mercer County, Pa., 1855. This had a simple antero-posterior split, caused by the intense pain and pressure of the inflamed pulp. A sudden, sharp report, and instant relief, as in the other cases, occurred in the left superior canine. She is living and healthy, the mother of a family of fine girls.

By contrast of extremes we are at times illuminated with unwonted clearness of perception, and were we in earnest to know the truth for the sake of the power to do good that it would confer, more than the gratification of what is called "an idle curiosity," we might the more certainly interpret the law of organic relation.

To my mind, the mineral, the plant, and the animal, properly interrogated, teach us the unadulterated truth.

These bursting teeth, under the immense pressure of accumulated force, teach many valuable lessons: philosophical to those able to grasp them, and *practical* to him who is quiet and willing to hear "their voice;" but to the stubborn and self-sufficient, only lessons of blank astonishment and wonder.

He who proposes to avail himself of the philosophy of dynamics, here asks, How was this force locally generated? and gets the response, By the increased amount of free caloric expanding the soft constituents of the pulp; or by the disintegration of molecules or cells passing through chemical changes, generating those little fellows, that always try to get as far away from each other as possible, called "gaseous particles," in which effort the force is produced locally, and must find vent even at the upheaving of almost infinite weights or removing of immense opposing strength.

The merely "practical" observer, if clear and honest, says, Ah! I thank you for your suggestive lesson; and at once resorts to his drill, and promptly relieves his grateful patron by simulating nature's law in relieving, but not in mutilating, for he afterward extirpates the offending membranes and vessels, and gives the patient an organ but one degree less perfect than it was before the disintegrating forces had set up their hated action.

But we must not pass without due notice (respect?) the stubborn, self-sufficient know-nothing who has taken it upon him to offer surgical or dental advice to his fellows, who replies, when inquired of what would be best to do, "Why, *bear* it, for it is not half as much as you deserve to suffer for your sins and negligences;" instead of plainly acknowledging, like a *man*, that he did not know, and was only enabled to look upon such intense agony calmly because he had no real knowledge of what it was to suffer; and hence, because *he* was not the immediate subject of pain, he thought that "in fact they had no *nerve* to bear *anything*, were very easily set to complaining, etc.;" all of which he would very readily take back if he could only be made to exchange places with the sufferer.

These men of *nerve* and *endurance* usually are like Falstaff—very courageous till put to the test. I have seen many of them bawl lustily when but slightly pained.

Then let the philosopher trace to the utmost limit of organic relation these astounding *facts*, and be willing to learn a lesson of the highest interest both philosophically and "practically." And let him who would be of a practical benefit to his fellows "seal" the instruction to his enlargement; and, instead of waiting for nature, proceed at once to relieve and save such cases in the way indicated.

And let those who "never heard of," "saw," or "believe" such cases "possible," just for once in their lives be willing to be borne out of darkness into the pure light and usefulness of "open vision."

FILING TEETH PREPARATORY TO PLUGGING.

BY D. VAN DENBURG.

Permit me to offer some suggestions in regard to "filing teeth preparatory to plugging," which the author of "Practical Hints" has hastily discussed in the December number of the Dental Cosmos.

The practice of filing V-shaped spaces between teeth, with the points of divergence at the gum, I regard as more objectionable than spaces with parallel walls, since the V-shaped spaces receive food more readily, and it becomes wedged more firmly in them, and is dislodged with greater difficulty. This, I know, is often denied; but a trial of both will convince the patient, if not the dentist, of its truth. These V-shaped spaces, also, perhaps more than any other, (for spaces with parallel walls are more frequently found with a shoulder near the gum,) are likely to permit filed surfaces to come in contact, and that too at the most dangerous point.

The first objects in filing a tooth are, to give access to the cavity, and to make a smooth and even surface. But the principal aim should always be, that the filed surface may not come in contact with another tooth, or so nearly approach another surface as to endanger it. It is sometimes difficult between molar teeth, when the cavities are small, to make easy access to them, without cutting away more of the teeth than is desirable, if we use the file alone for this purpose. I think a very excellent practice in such cases is to pass a thin separating file between the teeth, making just space enough to dress off the fillings and cutting away but little of the enamel. Then drill the cavity out through the grinding end of the tooth, and introduce the filling through the cavity itself, bringing up and finishing one face of it on the grinding surface. This practice avoids impairing the side of the tooth, leaves it in its original shape, and therefore offers no extra inducement to decay. When two teeth in contact are decayed, it will sometimes be necessary only to open but one cavity through the end of the tooth, cleaning and filling the other through this opening.

It is sometimes admissible to cut molar teeth with parallel sides, provided a shoulder can be left near the gum. That will prevent the future contact of the filed sides. But this shoulder should always come out from the tooth, with a rounded projection, making the outline of the space resemble the letter U. If the V-shaped space opening at the ends of the teeth is always objectionable, and it surely is, a space of similar shape opening either upon the palatine or buccal sides of the teeth is almost equally so. A proportionably large surface of the tooth is flattened, with nothing to prevent its coming in contact, at some point where it has been filed, with the adjoining tooth, with a space, if any remains, well calculated to retain whatever lodges in it. The V-shaped opening at the ends of the teeth, though it may soon bring two filed surfaces in contact near the gum, will seldom close upon the whole surface, inasmuch as the teeth, in this case, must be canted over on the long axis of their roots; while with the side-opening space, in order to bring about full contact, the teeth have only to be rotated on the short axis of their roots; which less pressure evidently will accomplish. The fact is, that none of these spaces are safe, except they be used in connection with a shoulder to prevent contact; and a shoulder is never admissible, unless it present a perfect surface of enamel, or enamel and gold. In large cavities, therefore, when the teeth are necessarily much broken or cut away, all the exposed surface of bone should be excavated; but the rim of enamel adjoining the gum should, if possible, be preserved, and the filling brought out with a shoulder to correspond with it. In cases where this rim of enamel is broken down and the cavity extends under the gum, a shoulder of the gold alone may be left to rest upon the adjoining tooth, and the space between the teeth left so as to bring them as nearly as possible parallel when this rest is found. The V-shaped space without the shoulder should never be used, and the V shape in connection with a shoulder, opening either at the ends or palatine sides of the teeth, should never, in my judgment, be used, unless the position or shape of the tooth leaves us no choice. Of the two, the palatine opening is certainly preferable. But the V-shaped space, with a shoulder opening on the buccal side of the class of teeth to which I now refer, viz., the molars, both small and large, is not only not objectionable, but very desirable, provided the space is of equal breadth at the shoulders and the ends of the teeth. Such an arrangement favors cleanliness perhaps more than any other, since mastication and the action of the tongue rather drive out food than wedge it in such a space.

Another excellent way to treat these teeth is to make the double V, or crucial separation, opening on both sides, and dressing the filling with two inclined faces. This is most advantageously used where two teeth are largely decayed on adjoining sides and it is not convenient to make a shoulder. Then the fillings, by striking at their central or highest points, prevent the danger of decay around the edges of the enamel and fillings. The teeth rest upon each other at the original points of contact, and offer no impediment to the successful use of the brush, pick, or thread. Sometimes, where the large molar teeth are much decayed on the back sides, and are difficult to see and reach, it is best boldly to slant them down, so that the operation of filling becomes more like that of a cavity on the grinding surface; for, though the masticating surface of the tooth is lessened, the increased durability of the operation warrants it.

Now a few words on the use of the file on the front teeth. The barbarities that are so painfully common in the use of this instrument, one would think would be less frequently met with where there is no excuse, either in theory or practice, for its abuse. Yet, in my experience, this is not the case. Front teeth cut with a thick file and the cavities cleaned and filled from the outer side, notches cut and left in them, I see often. There are no dentists, I hope, who would not be ashamed to advocate such practice. These are things so different from those that commend themselves to men of ordinary integrity and judgment, that they can only be charitably accounted for as emanating from knaves or fools.

The under front teeth, except in rare cases where the fillings would show, are best slanted outwardly, always remembering the well-rounded shoulder. None but the thinnest files should be used in separating front upper teeth. The chisel here must do most of the work. A thin, safe-sided, beveled-edged file, that the dentist himself can curve to any desired extent, is often very useful in smoothing the cut side and shaping the shoulder. I can hardly agree with the author of "Practical Hints" that it is ever admissible to nick or notch a tooth with the file; though certainly in the cases he mentions it would be less objectionable than cutting away a large portion of the tooth. Would it not be better to enlarge the cavity by drilling out its outer wall, so as to give room to introduce the gold, and leave the tooth in its natural shape? A similar course is often best with front teeth that rest upon each other only at the points, while there are considerable spaces at the gums, near which they are decayed.

I think there is room for much improvement both in the shape and cut of dental files. On the ground of humanity, we may at least ask for a smoother and finer cut, that would be equally efficacious and much less harrowing to our patients' feelings. Will not some of our Philadelphia brethren agree with me, and confer with Mr. Murphy on the subject?

OSWEGO, N. Y.

We give place to the above paper with pleasure, because the author seems in earnest, and is anxious to improve the *file* as well as the *filing of teeth.* We hope others will follow him in the journals with their views and practices on a subject which has not received as much attention as its importance demands. And permit us here to add, in a spirit of suggestion only, that each one will communicate his views and practices as *his own,* without objecting to another's mode; it will be much more pleasant, and doubtless equally valuable to all concerned. J. D. W.

LITTLE THINGS.

BY J. S. LATIMER.

IT is too true that the great mass of our profession are ashamed to contribute minor facts and experiences, such as occur to them every day, but are waiting to make some great discoveries which shall immortalize them and confer a *great* good upon the profession of their choice. This, I think, is a great error. It is not a *single* virtue that makes the true gentleman, nor can any *one* accomplishment make a perfect operator; but these desirable conditions depend upon the aggregation of minor virtues and minor accomplishments.

It becomes, then, the duty of every member of our profession to note these items as they occur to him, and furnish them to the profession through the journals.

Here, gentlemen, you have my excuse for the presentation of the following hints.

AMALGAM.—We are told that amalgam shrinks. (See *Taft's Operative Dentistry*, page 89.) Nearly seven years ago I came across the assertion for the first time, and, not content to receive it without experiment, placed a line or ridge of the freshly-mixed material, about two inches in length, between two fixed points. Some twelve hours afterward the middle was found to be raised up, and the two ends still pressed closely against the two fixed points, thus showing a considerable expansion. This, indeed, is what I might have anticipated from a consideration of the well-known fact that most bodies expand in the act of crystallization.

I do not offer this in defense of amalgam, but as a scientific fact.

FUSIBLE METAL PLUGS.—My brother says he came across the track of one of those eccentric geniuses called self-made dentists, and who, like certain irregular bodies that occasionally visit our planetary system, left behind him a long trail of the scintillations of his genius.

This gentleman, after such a brief preparation of the cavity as genius alone requires, caused the patient to lie down upon the floor; when, with a pointed soldering-iron, similar to those used by tinsmiths, a lump of fusible metal, which had been previously placed in the cavity, was melted, and as well adapted to its walls as the circumstances would admit. Of course such little unpleasant incidentals as blistered lips, etc. were of little note, so long as "the dentist" says the teeth must be filled.

CAPPING NERVES.—Though there is a decided difference of opinion with regard to capping *exposed* dental pulps, yet I have reason to believe that a majority of operators occasionally place caps over pulps which are *nearly* exposed, to prevent undue pressure upon them.

For this purpose gold plate, rolled very thin, is convenient. The cap, after being trimmed to the proper shape and size, may be rendered concave on one side by pressing a round burnisher upon it. I have found it convenient, at this stage, to place a very little beeswax on the concave side of the cap. This assists in retaining the cap in situ during the introduction of the gold, while at the same time it displaces the little portion of atmospheric air, to the presence of which some seriously object.

A particle of wax placed on the point of a small instrument and applied to the convex side of the cap, enables me to carry the cap to its position in the cavity without difficulty.

Bur-Gauge.—I find this a convenient instrument. By having my burs all marked with their sizes, I am enabled, by keeping them separate, to know at any moment whether my assortment is complete; also, I am enabled to supply the place on my tray of any bur or drill that gets broken or dulled, without as much delay as would otherwise be caused.

Again, it is invaluable to me in using cylinders; for, by knowing the size of my cavity, I am enabled to select a soft cylinder which shall readily enter the cavity, and yet be retained by the pressure against its sides until the plugger can be forced between the wall of the cavity and the cylinder, and the latter be thoroughly condensed against the opposite wall.

And so, by having my cylinders arranged according to their sizes, I waste as little time as may be, at a time when we need to make the most of every moment. By having the burs marked and placed according to their sizes much time is saved. This gauge may be made of ivory, but is better of metal. The holes should not be countersunk. Twenty holes will suffice. It is convenient, in ordering burs from a distance, to make an imprint of your gauge on a piece of paper, by placing a little printer's ink on one side of the gauge, and getting the pressure requisite by placing it in a common letter press.

Jones & White, of Philadelphia, are prepared to supply these gauges, made of German silver, at fifty cents each; and persons ordering burs of them and desiring a perfect assortment, should say, "by the bur-gauge."

Thus the dental furnisher and manufacturer can have a definite idea of what we desire. Those who love and appreciate the advantages of Heaven's first law will be pleased with this little instrument.

Bell-shaped Burs.—I find this class of instruments exceedingly useful for following the round burs, making the sides of the cavity perpendicular and the bottom level.

Theresa, N. Y., 1860.

"TIME IS MONEY."

BY J. D. WINGATE.

The above adage is true only when time is properly made use of; and he who teaches us to perform our tasks in a shorter space of time than we formerly used, and still perform them fully as well, confers a favor on us. For the many short-cuts and improvements dealt out monthly by that valuable periodical, the Dental Cosmos, it becomes all recipients to make at least an effort to reciprocate.

Patterns.—The swaging up of sheet-lead for patterns is attended with some difficulties. In the first place, the sheet must be rolled; it sticks to the dies, tears them, etc. I have for some time been using writing paper. This should be pressed down with the thumb into the plaster model, so as to lie closely, retaining the thumb of the left hand in the place, then turning the paper over the alveolar ridge the distance it is desired the plate should extend, and marking with a pencil, a short distance at a time, or just rubbing the paper down over the outside, will crease it sufficiently to see where to cut; (dirty fingers for this are no disadvantage.) Cut out the marked or creased pattern with scissors, and it is complete. For partial sets it is well, before moulding, to cut off the remaining teeth on the plaster model, leaving the stumps long enough to mark their outlines on the plate, when swaged sufficiently distinct, to cut out the spaces to be occupied by the natural teeth. Following this plan, a model may be trimmed so as to draw in moulding very nicely; besides, a correct pattern need not be had; consequently the work can be done in a very short time. Say it is desired to insert a silver case of four to six teeth: an annealed quarter or half dollar, rolled to the proper thickness, can be swaged without trimming as quickly as a leaden pattern. It is preferable to cut out the spaces with a pair of cutting forceps instead of filing, as is practiced by some. Scraps are more easily converted into plates than filings.

After having the plate ready for the mouth, a new impression, with the plate in its place in the mouth, may be taken. The removal of the impression will bring with it the plate. Into this impression a light plaster model may be run, which will be an exact *fac-simile* of the mouth as far as the plate extends. On this model may be fitted the clasps (if a clasp job) and the teeth; then, after being satisfied, on trial in the mouth, that the teeth are right, (the clasps need not go into the mouth till finished,) the whole may be fastened on the model last obtained with investing material, and teeth, clasps, and pins may be soldered at one soldering, with the assurance of having a well adapted case.

INVESTING.—Asbestos is, in the writer's estimation, the best material for investing a case preparatory to soldering. Having procured and kept on hand, about a year, a quantity of asbestos before using any of it, just because I did not know how, and as some others may be in the same fix, perhaps they may wish to know how to use it. For mixing in I use a large-sized teacup, which, for a large case, should, before wetting, be nearly full; taking in measure about two parts of asbestos and one of plaster, putting the asbestos into the cup first, then the plaster, water will now be required, enough to make a stiff mortar. Holding the case in the left hand, with the teeth downward, fill the upper side, patting down well with the knife; heap it up and turn over the case, putting it down on paper; press down with a tremulous motion till the investing is about one-fourth of an inch thick at the thinnest place under the plate; next plaster up the teeth to the thickness of from one-fourth to half an inch, holding the plate steady with the left hand, and assisting with the fingers to keep that already on, in its place, putting it up smoothly with the knife as it is put on. This operation must be done quickly, as the plaster has a tendency to set, when mixed, and if not used immediately will get brittle. In this way rings can be dispensed with, the fibres of the asbestos hold it together. Asbestos is a poor conductor of heat, and is on that account extensively used in the manufacture of fire-proof safes. If wires are used to prevent springing of plates, they may very easily be put in; but there is little danger of springing, if there is a very small space left between the teeth during grinding. Porcelain expanding so much more than plate, it is necessary there should be room allowed. In most cases the cracking of teeth is caused by overcrowding.

In about half an hour after setting up, if the teeth are not previously lined, they may be taken out and lined, and fastened in again with the investing material much wetter than that used previously. After lining and fastening, borax and solder may be put on the places of joining and pins, and the case put into the fire, heated to a dull red, and taken out and soldered in a very short space of time.

After soldering, the investing material from the heating may easily be pulverized, some of the plaster sifted out, and the asbestos is as good as ever.

Moulding sand is much improved by mixing with it the siftings of the investing material; neither the asbestos nor the plaster will burn by pouring on hot zinc; and the fine fibres that escape with the plaster will assist in holding the sand together.

Bellefonte, Pa., October, 1860.

DENTAL LIBRARIES.

BY U. D. TAYLOR.

Frequently, while conversing with an intelligent patient upon the origin, progress, and attainments of our profession, have I been asked, "Doctor, where is your library?" Dolefully I point to the few bound periodical, but fewer text-books, in a little case, and ofttimes wish that some of them even were "locked up and the key lost;" for, should that inquirer take down some of them and read the sage advice therein given, or some of the communications therein contained, I am afraid that he would say, like the *Sennar* minister did to Mr. Potipher: "I beg pardon!" replace the book, and change the subject. To be sure, I can say in defense, ours is a young profession—in fact, just beginning to take a stand among the professions—but a few years since we could boast of no text-books or periodicals. But still the thought will come, is there no vacuum now, in the literary world of dentistry? Has all the ground been gone over? Most certainly not! Then, why is it that our libraries are so thin? Simply because—and I blush to say it—we have but few, very few among us *competent to the task!* Now cannot this be remedied? Certainly it can! Let every dentist, let every dental college insist upon a thorough English, and, if need be, classical education of every applicant for admission; then, let the dental education of those who *are* admitted be such as it should be, and in a few years incompetency would cease to be a stain on our escutcheon.

Heretofore the colleges were comparatively poor, and, to judge by some of their fruits, asked no questions but as to the state of the funds in the applicant's pocket. But now they can no longer plead poverty; there are intelligent, educated young men enough in this country turning their attention to dentistry to support all the colleges we now have, and were they to make it a rule to admit none but of this class, our profession would soon be weeded of the hundreds who now disgrace it, and become in toto a *profession.*

And then, many who now stand aloof for reasons above given, will joyfully lend their aid, not only to support the colleges now in operation, but to establish as many more. Such a course would be better for us now, better for our successors, better for all time. Then, in future times, never will the dentist be asked, "where is your library?" but with pride can show, on well-filled shelves, books containing "brave words and true" on every subject, on every operation connected with his profession; then will they grasp a dentist's hand and call him "brother;" then will all the petty jealousies and animosities be counted as things that were; then will we cease to be classed with the barber or tooth-puller, or at least cease to be looked upon as a "tin kettle tied to a doctor's tail;" then will the profession be recognized as such, and its members be respected and honored among men. But until that time *does* come—until we are rid of these drones—they will act as a drag to the few worthy, brave hearts who are so gallantly struggling, devoting time, energy, money, life, to the great cause of elevating to and establishing dentistry on a *firm professional basis.*

FORT MADISON, IOWA.

RETENTION OF TEMPORARY TEETH.

BY GEO. H. HORN.

IN a previous issue of the DENTAL COSMOS, I noticed an account of many instances of the retention in their places of several temporary teeth. Having my attention thus directed to the subject, I thought of examining some skulls to find whether any such instances could be found. Commencing with the skulls in my possession, I examined one which has always attracted attention on account of the beauty and symmetry of its teeth. On counting the number of teeth in the upper jaw I found seventeen, nine of which were on the right side and eight upon the left. In endeavoring to determine the supernumerary tooth, I was at first led to suppose it an incisor, though the conoidal body soon showed its nature, that of a canine. It is situated slightly within the arch of the other teeth, being between the permanent canine and lateral incisor. The skull containing the rarity above mentioned belonged to an Irishman, who was about twenty-eight or thirty years of age. His age could be only approximately ascertained, he being a subject of dissection in the anatomical rooms of the University of Pennsylvania. In its recent condition the tooth was quite firmly attached to the jaw, so much so that its motion could hardly be perceived. The fang was shortened by absorption, and the alveolus almost completely filled up, so that it was held in position mainly by the stout fibrous tissue of the gum.

IMPORTANCE OF PRESERVING THE LINING MEMBRANE.

BY F. D. OLIVER, M.D.

In a previous number of the Dental Cosmos I saw an article from the lucid pen of J. D. White, which clearly demonstrates the importance of preserving as much of the lining membrane of the dental canal as possible, and as I think my practice for the past four years will prove his theory correct, I will state that line of practice, which you can, if you think it of any value, place on record in the pages of your valuable journal.

I have saved a large number of teeth during the past four years, molars and others, where the pulp was exposed, by drilling a little below the neck of the tooth, into the pulp chamber, and afterward extirpating, through the cavity of decay, the pulp in the chamber, only waiting till the bleeding has subsided, and using a saturated solution of chloroform and camphor to soothe and astringe the mouth of the canal. I sometimes fill immediately, always with good foil. If there is any pain after having cleared the pulp chamber, I wait two or three days, or till the inflammation and pain has entirely disappeared.

Not one of all the teeth I have treated in this way has yet ulcerated, and simply, in my humble judgment, because the lining membrane of the canal has been preserved, which, together with the periosteum, has sustained the vitality of the tooth. The operation of drilling and extirpating may be rendered painless in almost every case by passing a slight stream of electricity through the instrument.

Buffalo, N. Y.

PROCEEDINGS OF DENTAL SOCIETIES.

PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

REPORTED BY GEO. T. BARKER, D.D.S.

A monthly meeting of the Association was held on the evening of November 13th, 1860, at eight o'clock.

Present, Drs. Kingsbury, Peirce, McQuillen, Suesserott, Van Osten, S. Roberts, Townsend, Barker, and a large number of students from the Pennsylvania College of Dental Surgery.

The President and Vice-President being absent, on motion, Dr. Kingsbury was called to the Chair.

He stated the subject for the evening to be the consideration of

"DENTAL NECROSIS."

Dr. Barker, having proposed the subject, opened the discussion, and referred to the great difference between necrosis in the osseous and the dental systems: in the first a new development takes place beneath the necrosed portion, regenerating to a certain extent the parts destroyed; while in the latter, there is no attempt at restoration, except in rare cases, where the cementum is the seat of the disease.

He also referred to the causes which induced dental necrosis, and considered they might properly be divided into exciting and predisposing, or first, those arising from external causes, such as local injuries; and the latter to those due to a systemic influence. He presented to notice a necrosed bicuspid tooth, which in his judgment was induced by an application of the arsenical paste for the destruction of an exposed pulp, and related the circumstances attending the case. The cause of discoloration in such teeth was also spoken of.

Dr. Suesserott referred to necrosis as seen in the osseous structures, and presented at some length the causes calculated to induce the disease and the general treatment indicated; and spoke of it as seen in cases produced by excessive mercurial salivation, and also when due to arsenical preparations, and of its most unfortunate results in cases of necrosis of the alveolar processes, particularly with children previous to second dentition.

Dr. McQuillen presented to notice several interesting specimens of dental necrosis; in one of which, (given to him by Dr Nutz,) the whole alveolus surrounding the fang had been attacked, and was removed with the tooth, and stated that the disease had been induced by an application of the arsenical preparation for the purpose of destroying an exposed pulp. He also referred to necrosis of the maxillæ as seen in match factories, due to the phosphorus employed in making lucifer matches by the operatives, and considered it was, to a great extent, produced by uncleanliness, as small portions of phosphorus would be taken into the mouth with the food; and if the teeth were carious, it would be carried by the saliva into such cavities, and would eventually produce phosphor necrosis. In illustration of this affection a valuable specimen of a necrosed maxilla was presented.

Dr. Kingsbury related at some length several interesting cases from his own practice, also giving his usual treatment.

Drs. Townsend, Van Osten, Shatuck, and Latimer presented interesting cases from their own practice, and, after an animated discussion, the meeting adjourned.

A STATED meeting of the Association was held on the evening of December 4th, 1860, at eight o'clock.

President, Dr. Dillingham, in the Chair.

Present, Drs. Buckingham, Garretson, McQuillen, S. Roberts, Githens, Fitch, and Barker.

The minutes of previous meetings were read and approved.

The Committee on Membership reported the name of S. Townsend Brown, D.D.S., as a candidate for membership. An election being entered into, he was declared elected.

The Committee to purchase books for the Library reported progress, they having purchased a number of works, which had been placed in the library.

No other committees were prepared to report.

Unfinished business being in order, Dr. Barker moved the adoption of the amendment to the By-Laws proposed by him at the last stated meeting. After a lengthy discussion it was adopted. The amendment alters Article VI. Section 2 to the following: Any one applying for active membership must be a resident of the State of Pennsylvania.

General business being in order, an animated discussion took place upon the propriety of the appointment of a committee to revise the minutes of the first meetings of the Association, with a view to their publication; without taking action upon the subject, the meeting adjourned.

A MONTHLY meeting of the Association was held on the evening of December 11th, 1860, at eight o'clock.

Present, Drs. McQuillen, Roberts, Fitch, McGrath, Peirce, Githens, and Barker.

On motion, Dr. Fitch was called to the Chair, who stated the subject for discussion to be

"DENTAL EXOSTOSIS."

Dr. McQuillen remarked that dental exostosis might be due to either constitutional or local causes. The constitutional influences being the same that would induce hypertrophy in the osseous system, as seen in the gouty, rheumatic, or the syphilitic diathesis. He remarked that the bones which were the most exposed to changes of temperature and to external injuries were the most liable to be attacked; this was noticeable in the tibia, as it was apt to become exostosed in cases of tertiary syphilis. The same influences may act in exciting dental exostosis, as the teeth would be subject to the same changes of temperature and external injuries. The local causes that would induce hypertrophy were numerous, as, for instance, the presence of tartar around the necks of the teeth, a bad filling (as seen in the specimen presented, where the amalgam has pressed upon the gum) extending beyond the neck of the tooth, the irritation induced by filling over a pulp that is nearly exposed, the destruction of a pulp with subsequent periostitis; each of these causes might, under certain circumstances, develop the disease. He referred to the change that would take place at the end of the fangs of exostosed teeth, and remarked that he considered it an exceedingly difficult disease to diagnose with certainty.

Dr. Barker referred to the general symptoms of exostosis, resembling in many cases those of rheumatism, or of gout; also spoke of the difficulty in diagnosing the disease, and presented several cases, in one of which the pain was of a neuralgic character, and was only relieved by keeping cold water constantly in the mouth.

Dr. Kingsbury had found extraction to be the only true way to determine the existence of exostosis in the majority of cases. He had met with many cases in practice due both to constitutional and local causes, and remarked that it was frequently seen upon dead roots and those that had been pivoted. He considered there was a striking analogy between the development of exostosis and the formation (of what Tomes terms) osteo-dentine.

A lengthy discussion ensued upon the last position assumed by Dr. Kingsbury, which was participated in by Drs. Barker, Peirce, Kingsbury, and McQuillen.

Dr. Fitch directed attention to the development of exostosis in the gouty diathesis, and in confirmation, referred to the labors of Richardson on this subject, who had obtained from some exostosed teeth, by analysis, crystals of uric acid, an acid which is present in excess in gouty subjects, and which, when combined with soda, forms the concretion met with in the joints of patients suffering from that disease. He however thought that cases of dental exostosis from such a cause were of rare occurrence.

Dr. Kingsbury referred to the bulb which could be felt in certain cases where the lower teeth were exostosed; thus in many cases assisting in the formation of a correct diagnosis.

Drs. Githens and Fitch spoke of several interesting cases of difficult extraction of exostosed teeth.

The subject of

"THE ABNORMAL CONDITIONS OF THE MOUTH DURING CHILDHOOD"

was chosen for the next discussion.

NOTE.—We regret that, in consequence of numerous engagements, it is out of our power to present to the readers of the DENTAL COSMOS anything more than a short synopsis of the meetings of the Association. G. T. B.

EDITORIAL.

TAFT'S OPERATIVE DENTISTRY.

In continuation of the review of this work, we pass over the article on plugging instruments to that of the *separation of the teeth.* We commend the careful study of this article to every dentist who has not fully made up his mind as to the best and most judicious course to pursue in separating the teeth, as a careless observance of the rules laid down by the author often ends in great mischief.

Filling of Teeth.—The series of chapters under this head shows the author's abilities to much greater advantage than any preceding ones; we are quite sure that if any one will follow his directions carefully he will accomplish good operations. The author treats the subject, however, as though it was *a matter of course* that the cavity can, under all circumstances, be kept dry; this has not been our experience; so that in the event that a cavity *cannot* be kept dry, what is a young man to do with a nervous patient, and the saliva running over his work as from a hydrant? We prefer to plug a cavity in the *dry*, and have given considerable attention to the construction of instruments and apparatus for that purpose, but we cannot always succeed, and when we cannot we use non-adhesive foil, in the form of pellets cut from the rope. We make these remarks not to find fault, but to tell the truth and relieve the inexperienced from making four or five ineffectual attempts, and then giving a case up in despair. A late dentist, distinguished for his neatness in operating and aversion to saliva, on one occasion, while filling a tooth, discovering that he would be overrun, hastily took up his syringe and threw a jet of *water* over the tooth and plug, preferring that to the *saliva.* The appliances and directions for keeping the mouth dry are good, and doubtless efficient, but we do not regard it as treating a patient as a *human being,* with nerves and spasmodic muscles about the mouth and face, by putting the mouth in a *vice,* as it virtually is, in using the cork between the teeth, or Dr. Thomas's instrument. Upon the whole, the author has treated the subject of filling teeth and the classification of cavities in a masterly manner. The *chapter* on *pathological conditions* and *inflamed dentine,* as far as it goes, is very good, and perhaps comes up to as much as is definitely known on the subject at present, except that the author seems to take the position that sensibility of dentine is always an abnormal condition, to which we cannot quite, at present, agree; we believe that sensibility of dentine may be in some temperaments normal or natural to the teeth, and not resulting from the contact of irritants or inflammatory action. We have considered the subject on many occasions, especially the treatment of sensitive dentine, and of course it is useless to refer to it now. We observe nothing new in the *chapter* on *exposed pulps* and *fang filling* other than is generally practiced. These articles are well and clearly written. To the objectionable portions on the treatment of the exposed pulp we have nothing to add, as we had prepared an article, under the head of "Practical Hints," for the present number of the DENTAL COSMOS before reading the above, which fully expresses our views on the subject.

The article on *alveolar abscess* is a fair article, and contains judicious and correct views. With regard to the balance of the work, on *treating teeth*, *extracting*, etc., the objections to them would be no more than we would perhaps make to any other operator's practice, although the directions are not as full and as varied as could be desired in a work on operative dentistry, especially on the construction of pivots and preparing roots; but we regard those articles as a fair exposition of the subjects considered, and take leave of them and the work by expressing our kindest regards for the author, and commending his work to the consideration of the profession. J. D. W.

DENTAL SURGERY IN THE HOSPITALS.

It is somewhat singular that, notwithstanding the advance dentistry has made in America, theoretical and practical, no effort has ever been made to add to the efficiency of the medical and surgical staffs of the numerous hospitals in our large cities, by the appointment of dentists competent not only to relieve the sufferings of patients who seek relief from the eleemosynary services afforded by such institutions, but also to impart to medical students in attendance valuable and necessary information on those important points in connection with diseases of the dental organs, which it is generally conceded that the practitioner of medicine should be acquainted with. Through information thus obtained, innumerable cases of neuralgia, of fistulous discharges about the jaws, etc., instead of being treated for weeks and months by physicians and surgeons, without affording the slightest relief to the patients, would at once be referred to the dentist for advice and assistance.

In England the staffs of some of the hospitals have included, for nearly a century, dentists in addition to the physicians and surgeons. In this capacity a Mr. Rae served at Guy's Hospital as early as 1782. He was succeeded by Mr. Fox; and upon the death of the latter gentleman, Mr. Bell, the present incumbent, was appointed. It cannot be questioned that the general views on the diseases of the teeth, and the local and constitutional effects induced by their presence, imparted by these gentlemen to medical students, enabled them to start forward on their career in the practice of medicine, far better qualified for the faithful discharge of their duties than if such information had been withheld from them.

Regarding this as a subject worthy of careful consideration on the part of the profession, we have not deemed it advisable or necessary to enter into a detailed consideration of its merits, but desire to be understood as presenting the above views suggestively, trusting that they may meet with a favorable response, and if such a movement should be deemed practicable, that it may be the means of extending the sphere of usefulness of the dental profession. J. H. M'Q.

REVIEW OF DENTAL LITERATURE AND ART.

BY J. H. M'QUILLEN, D.D.S.

TANNIN AND GLYCERIN.

We recently employed, with marked advantage, a saturated solution of tannin and glycerin in a case that came under our care, in which the integuments covering the hard palate had been raised to a blister, and then cracked down to the bone by a tightly fitting gutta-percha denture, with a chamber in the centre. The mucous membrane, as might be readily supposed, was very much excoriated, and there was a slight discharge of pus from the fissure in the centre. On examining the under surface of the denture, the margin surrounding the chamber was found quite sharp and somewhat prominent; this was reduced so as to give the margins a rounded form. The patient, however, was requested not to wear the operation until the parts were healed. To facilitate this process, she was requested to paint the part, by means of a camel's-hair pencil, with the above solution two or three times a day. At the expiration of a week she felt something sharp protruding through the fissure, and on removing it found that a small portion of the palatine process had exfoliated. A very short time after this the parts were restored to a healthy condition.

We have also advised the application of this preparation after the extraction of teeth, and believe that it hastens the reparative process in a marked degree. The tannin, of course, acts as an astringent, and the glycerin as a demulcent; the two combined making a very pleasant and valuable remedial agent.

AMERICAN JOURNAL OF DENTAL SCIENCE—OCTOBER.

"SOME CASES ILLUSTRATIVE OF THE NATURE AND TREATMENT OF PAIN ABOUT THE FACE: FACIAL NEURALGIA. By C. MCELROY, M.D.—No attempt will be made in this paper to present an elaborate monograph on the subject of facial neuralgia, or pain about the face; but some cases will be narrated of very opposite pathological character, and relieved by very different remedial measures.

"The reader will understand, then, that what follows are the actual experiences of a country physician, with the realities narrated in a style of a professional conversation, seizing the distinguishing features rather than the minutia of their progress to recovery.

"W. F., aged between twenty-five and thirty, is a laboring man, of ordinary good health, a teamster, and married. When exposed to the chilly, wet weather of early autumn and spring, is frequently seized with face-ache, commonly confined to one side, with very tender teeth—many of them carious—but still only giving trouble on such occasions. This state of things yields very kindly to one or two decisive doses of morphine, followed, after the subsidence of the pain and tenderness, by a saline or oily purge. He seldom loses a day if the decisive doses of morphine are taken at night.

"A peculiarity of his case is, that no other form of opiate produces this result. This case is classified as one of facial neuralgia strictly.

"Mrs. J. B. A. is a lady in the meridian of life, good general health, with the cares of a large family pressing on her; became troubled with a cough in the autumn of 1859—probably a sub-acute bronchitis, and possibly somewhat asthmatic—which excited but little solicitude. Domestic or homœopathic treatment only was made use of up to the early part of January, 1860, when, opportunity offering, she made a trip of some hundreds of miles, to join in some festivities in the family of a relative; her family thinking the trip would benefit her.

"Contrary to their and her expectations, she became much worse during her outward-bound trip; and arriving at her destination, her powers of endurance were sorely taxed to join in the festivities for which she had gone. She continued to grow worse until she arrived at home again, having been absent about a week. A homœopathic physician saw and prescribed for her during the next three days, but she continued to grow worse. Saw this lady in the forenoon of Tuesday; found her with extremely anxious countenance, flushed face, rapid pulse, considerable cough, intense pain in her right eye and about the temple, great intolerance of light, tongue furred, appetite completely gone, and sense of extreme exhaustion. A sad picture indeed. Her only entreaty was relief from the agonizing pain about the eye and in the eye, or she would go blind.

"With as little delay as the importance of the case would admit, an emetic was decided upon as the first step in the treatment—Ipecac. and capsicum. After emesis, to take hyd. c. creta, Dover pow. and morphine; chloroform and heat to her eye and temple.

"Wednesday.—Emetic had operated freely. Had taken powders as directed. Stomach had been more or less irritable all night, with occasional vomiting, and on the whole very little better. Pain intermits occasionally. Treatment to-day: brandy and morphine; mint-water, with creta ppt., to settle stomach. Chloroform and aconite to temples, with heated flannel or raw cotton to the eye and temple. To take some nourishment if possible.

"Thursday.—Patient very little better. Pain very severe. Could not take brandy; thought it made her worse. Had a very bad night. Is suffering severely to-day. Applied magnets—electricity—with no relief. Mustard poultices to the stomach: hot foot-baths; milk-punch; morph. and hyd. c. creta, with a continuation of the hot applications to eye and temple.

"Friday.—Patient no better; passed a bad night again. Pain about temple and eye still very intense. No motion of bowels. The existing state of things was very discouraging both to patient and physician, and her urgent cry was still for relief from the intense pain. Asked for ice, salt, and thin cloth. Pounded the ice fine, and proceeded to make a freezing mixture to apply to the seat of the pain. Patient very much alarmed, as was her daughter; wanted the matter postponed; was certain it would make her worse. When all was ready, permission was obtained to try it. The pounded ice and salt, enveloped in a thin cloth, was applied and kept on, perhaps half a minute; patient complaining of intense burning. A little rest and it was reapplied, and removed as often as she desired, during a quarter of an hour. When the application was over, all pain and soreness was completely gone, and patient was very much relieved, and expressed herself very grateful for it. Directed ice and salt again, if pain should return, to take a Seidlitz powder and eat something.

"Did not expect to visit patient again without being sent for, and on Saturday morning had a message from the family to the effect that the medicine had moved her bowels so severely that she was in great danger from exhaustion. Hurried off to see her (three miles.) Found her entirely relieved of all pain and soreness about eye, tongue cleaning, pulse good, but somewhat feeble, and everything in the best possible way. Gave a little brandy and creta ppt., and requested its repetition in case her bowels continued to act, and to eat as much as she could.

"The relief was perfect and complete. In less than a week she was quite well, and had regained nearly all her loss.

"This was a very curious and interesting case to me. Its pathology is not very plain. The most probable hypothesis is, that the nerves or nerve coverings about the temple and eye were in a state of inflammation or irritation. One thing is certain, that the narcotics externally and internally did not benefit her much, if any. The freezing mixture was most likely the potential counter-irritant, combined with the mercurial alterative, that removed the difficulty. The physician was quite as much gratified as the patient at the somewhat unexpected, sudden, and perfect recovery of the patient from so harassing and distressing a difficulty.

"A. L. W., aged thirty-five, an active though nervous gentleman, enjoying in the main good health, is at uncertain times seized with violent pains in the right eye, which soon becomes intolerant of light and deeply infected with blood, accompanied by rapid pulse, flushed face, anxious countenance, etc. Is generally relieved by a decisive dose of morphine and calomel, and not by either separately, as found by frequent experiment. Upon one occasion, several years since, had to have a slightly carious tooth removed before recovering, after vainly striving with remedial agents two weeks. After the removal of the tooth his recovery was rapid and complete.

"Mrs. J. B., a lady eighty years of age, has been remarkably healthy during her long life, entered the summer of 1860 with crippled health, tongue furred, appetite bad, with great sense of exhaustion and weakness, but apparently no settled disease, unless a rheumatic condition of the lower extremities could be so called. The limbs were not in actual pain, but stiffened, and difficult to move. All this stiffness upon a sudden took its leave, and in its place she had a violent ache in the head and face. Diagnosing this to be a metastasis of her rheumatism, every effort was made to repel it from the head and invite it back again to her feet and limbs. Chloroform, aconite, laudanum, camphor, ammonia, and the freezing mixture were in turns applied to her head and face with but little relief; while stimulant foot-baths, frictions, and poultices were applied to the extremities. She bore opium very badly, and its use was consequently limited; but she had brandy and narcotics. Small doses of calomel, with an occasional dose of Husband's magnesia, were the effective agents in her relief. She is now rapidly regaining health and strength.

"Mrs. J. S. C., an exceedingly delicately-organized lady, in the meridian of life, whose residence is in New York City, with, for the last four or five years, fair average health, was taken ill while on a visit to relatives in our city during the last summer.

"From her peculiar organization she had some idiosyncrasies in regard to standard remedies, which forbid, as she had been told in New York, their use in her case. I found opium was out of the question, and she had a great terror of calomel and blue pill.

"Respecting, as I did, her prejudices, they were not employed in the earlier part of the treatment of her sickness, though indicated at times very strongly. Her case was diagnosed as *hay asthma*, or *autumnal catarrh*, characterized by severe cough, great sense of exhaustion, intensely reddened mucous membranes; and, at a later stage, intense pain in the head. Finding it impossible to obtain relief from stimulants and external applications, recourse was had to an emetic, followed by blue pill and magnesia, with prompt and effectual relief; as she rapidly recuperated, recovered strength and appetite, and went home very much improved, with few, if any traces of her tedious illness while absent.

"J. T , aged twenty-five, cotton factor, of good general health, consulted me in the fall of 1859, for intermittent headache, for which quinine was prescribed; which, however, failed to arrest it. The doses were repeated in much larger quantities, until it was satisfactorily ascertained that they would not arrest it. Local applications of every conceivable sort, including electricity, also failed. Alteratives, with purging remedies, were also prescribed, with like results. The last prescription was carb. ferri. precip., which likewise failed, when he ceased to consult me, having made up his mind he could not get rid of it. Some time after, a toothache sent him to a dentist, who extracted it; after which, for months, his headache never returned. It did, however, return, when a tooth was found tender and extracted; since which, up to this time, he has had no return of the pain in his head, and enjoys very good health.

"No claim is made to any of the cases cited as being in themselves very remarkable; on the contrary, they are common; but they fairly represent several aspects of facial neuralgia and pain in the head. From them we may deduce as follows:—

"That the cause of pain in the face or about the head, in the majority of cases, must be sought for elsewhere than the seat of the pain.

"That local applications, of themselves, do not possess much value as remedial agents. The apparent exception in the second case must be received with some caution, as the constitutional treatment was in progress at the time of the application of the freezing mixture, and culminated in the critical discharges from the bowels the following afternoon and night; though due credit must be given for the prompt relief it gave at the time.

"That the general principles applicable to the treatment of inflammation, irritation, and congestion, are pretty certain to bring relief of a permanent character, as opposed to the plan of temporary relief from external applications and stimulants internally.

"That when the cause is located in a caries of the teeth, or periosteal inflammation, constitutional treatment for the most part fails; the tooth or teeth must sooner or later be removed—of this character was the third and last case.

"That where the irritation is in the nerve of the decayed tooth or teeth alone, decided doses of narcotic stimulants will, for the most part, be successful.

"Lastly, that while, as physicians, we much respect the prejudices and opinions of patients, we must not allow them to interfere too long with correct medical diagnosis and therapeutics, based upon well-ascertained truths in the healing art; for, at a proper moment, the prejudices of all sufferers will give way to correct and rational treatment, founded in general principles, and with a well-grounded hope of relief."

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Cincinnati Dental Lamp.

"Pivot Teeth. By James Taylor.—The insertion of pivot teeth has of late years become much less frequent than formerly, and I propose very briefly to examine the causes which have led to this. First, and that which has led more than anything else to the disuse of this operation, is the prominence which has been given to mechanical dentistry by a very large proportion of the profession. To me there appears to be a kind of reckless disregard for the real good of many patients by those who wield the forceps, that they may make room for plate-work. They argue to their patients that these roots must come out in a few years anyhow; that the pivots are constantly getting loose, and that such teeth are offensive—taint the breath, etc.

"Let us see if these arguments are of any real force. Say that the roots will give out in a few years; will they not, if properly treated, last on an average as long as plate teeth? I do contend that good roots will last on the average full out as long as teeth that are embraced by clasps. Do teeth to which clasps are attached usually last over five years, and cannot good, healthy roots be made to last that long?

"I am persuaded, by close observation, that often, *very* often, the secret is, that instead of inserting a single pivot tooth for a patient, the good root is sacrificed; that two or more bicuspids may also be inserted, thus getting an operation which will be worth some three times as much to the operator. Now this operation, say one front and a bicuspid on either side, lasts five years, and then two more must be added; and, worse than all, the adjoining teeth have been kept in a crowded state, and they have to be filled. No wonder some should say that the more they have done the more they need. The fact is, that these bicuspids should not have been inserted at all. I am only alluding to cases of very common occurrence, and their repetition has become so frequent, that I sometimes feel that the practice twenty years ago was at least a safer one, when plate jobs were as rare as pivot teeth are now.

"I still prefer to give these molars or bicuspids, which are sacrificed to the use of clasps, the benefit of five years' more real use to the patient, by inserting such of the front teeth on pivots as can be well done.

"But patients are told that the pivots are constantly getting loose. Well, now this depends on circumstances almost entirely. They get loose just as badly-inserted plugs get loose, and unless the tooth is properly adjusted to the fang, and a good pivot inserted, of course they will get loose; teeth that are stuck in without due regard to fit and adaptation, for one or two dollars, ought not to be expected to remain.

"This loose and slovenly manner of inserting such teeth very properly accounts for the bad breath of which they are so often accused. The fact is, so long as the joint is perfect, no more, if as much bad odor comes from them as a plate operation. The fact is notorious, that plate teeth in the mouths of careless persons are far from being sweet and cleanly.

"If the position which is now so generally entertained by the profession be correct, as it regards the use of dead teeth, it would seem that the practice of inserting pivot teeth must again be restored to its former position; yea, a great way in advance of its former position; for if nerves can be removed, fangs filled, and half crowns made serviceable, the same doctrine and treatment applies to the preparations of roots for pivot teeth.

"One great cause, which I have not yet named, which has done much to set aside pivot teeth, was the frequency of alveolar abscess which attended the operation. This need not any longer be an objection; for if the root is treated and the point of the fang filled, as when teeth thus situated are to be plugged, the same favorable results must follow. For several years this has been my practice, and I no more apprehend alveolar abscess in the one case than the other.

"In my remarks I have said nothing of atmospheric plates for small operations, which I regard as the only kind to be used where admissible; yet even the best of such cases cannot compare in use, or generally in appearance, with a well-adjusted pivot tooth; no artificial tooth can so well restore articulation. I would not detract one iota from the credit due the profession for the great advancement in mechanical dentistry. Those of us who have been laboring in the cause have seen nearly all of it, in all stages, yet I fear that it takes position in many mouths when it should not. One of my old patients returned to my professional care yesterday, after several years' wandering in the search of perfect dentistry, with a lower molar and bicuspid attached to the adjoining teeth. She was urged to wear these teeth, not because they were serviceable for mastication or for articulation, but to prevent an antagonist of the superior jaw from elongating. I could not but think how great a departure this from the sagacious advice of Keocker. Since I commenced to pen this article this evening, a lady came into my office suffering excruciating pain from a pivot tooth inserted this afternoon, on an aching root, diseased at the apex of the fang, which should have been treated before the tooth was inserted; the nerve cavity above the pivot was open, or perhaps rather filled with matter.

"I infer that true science had but little to do with either of the above operations. These, however, are not the only cases of malpractice which have come under my observation within the two days past."

PHYSICAL EDUCATION.—The following extract, on the advantage of physical training, a subject of vital importance to dental practitioners, is taken from an Inaugural Address delivered by Daniel R. Goodwin, on entering upon the Provostship of the University of Pennsylvania:—

"Physical education,—the training and care of the body, the right development of the bones, muscles, nerves, lungs, and other parts of the physical economy, the due training of their functions, the formation of habits in consonance with the laws of nature and of health,—is an indispensable condition and necessary basis of all education for any earthly purpose. Of what use are the brightest intellect and the richest stores of knowledge, with a dyspeptic stomach, shattered nerves, and a fagged, oppressed or distempered brain?

"It is true that physical education, for the most part, will take care of itself, if you only leave it a fair and free opportunity. It needs no great public institutions, no combined efforts or expensive arrangements. If the child and the youth are sufficiently left to themselves, nature will generally secure their physical training. This may not, indeed, always be the case; and sometimes, especially in crowded cities, some special guidance, or urging, or apparatus may be necessary. But that it is so generally the case, is probably the chief reason why physical education is so much lost sight of, and so often and grievously encroached upon. Our schools and literary institutions may not, it is true, be called upon to furnish any special apparatus or drill for physical education; but they *are* bound so to limit and adjust their daily and weekly demands upon the intellectual application of the pupil as to leave him sufficient time, and sufficient cerebral energy, for due attention to his physical development and well-being;—and, I think, they are bound also to urge upon him the necessity of this attention as one of their most familiar and important lessons. I think that in this country, and in these later times, our zeal for precocious intellectual development has led to some serious practical errors in this particular. Our hot-bed intellectual culture will end in an intellectual, as well as physical debility and atrophy. In this the English are wiser than we. Their educational arrangements are so made as to encourage a robust physical development, as well as high intellectual attainments. The result is, that there is not, probably, in the world a finer race of men, physically, than the educated nobility and gentry of England. So, too, with the ancient Greeks and Romans. With them, the athlete and the philosopher went side by side, and were sometimes identified in the same person. They achieved their greatness almost as much by their physical as by their intellectual culture. National power and military greatness obviously depend upon it as their indispensable condition. *Our* tendency, especially in great cities, is, to separate the physical and intellectual, so that one class may have all of the one, and another all of the other. But this is neither well, nor wise, nor safe. We should rather seek to combine them as much as possible. Thus the intellectual power would be more efficient, and the brute force less dangerous. The intellectual needs the physical in order to achieve its greatest victories. It is not the giant intellect alone that bears off the palm in the struggles of the forum or of the senate, in professional life or in the political arena; but the well-knit frame, the iron nerve, and the power of unlimited tension and physical endurance.

"We may affect to despise the mere body and mere physical training as much as we will; but, after all, a strong and fair proportioned human form, a well-developed physical frame, nervous, muscular, vigorous, agile, swelling with fresh life and ready for action at every point, is a magnificent sight; and the spontaneous, popular homage paid to such men as Heenan and Sayers—which we are apt to look upon with so much disgust, and, erroneously, to regard as a mark of the degeneracy of the age—is an expression—rude, one-sided, and extravagant no doubt—yet an expression of nature and of truth. We do well to give heed to the lesson which it teaches us."

Dental Review of London—September.

Maxilla and Teeth of the Troglodytes Gorilla.—A series of able and interesting communications have been published in this magazine "On the Teeth and Maxillary Bones in the Highest Forms of Quadrumana," from which the following extract has been made.

To many readers the statement relative to the size of the inferior maxillæ of the Tr. Gorilla may appear somewhat exaggerated, but the plaster cast of the skull of a full-grown animal which we have in our possession not only proves to us the correctness of the statement, but indicates, in the most unmistakable manner, that this creature must be a formidable enemy to man and beast.

"In contrasting with the human inferior maxilla the mandible in the highly-organized Apes selected for comparison, we shall commence with the genus *Troglodytes,* and would first direct the reader's attention to the lower jaw in the larger species, *Tr. Gorilla.* The first thing that demands observation is the much greater size of the bone in proportion to the size of the animal. The height of the adult Gorilla is five feet six inches; but the jaw is at least twice as massive as that of Man, and its length considerably greater, not only absolutely, but in proportion to the space which separates the condyles. In a specimen of the adult male examined by Professor Owen, 'the length of the jaw, in a straight line from the back part of the condyle to the fore part of the symphysis, was seven inches five lines; from the outer side of one condyle to that of the other, five inches five lines.' In Man, the inter-condyloid measurement is quite equal to that of the same space in the Gorilla, in many skulls it is greater; but the length of the adult male human jaw, measuring in the same way from the back part of the condyle to the front of the symphysis, is only from four and a half to five inches. The next point of difference is, that in the bone under consideration there is no approach to the regularly convex horseshoe shape which characterizes the human mandible. If lines drawn on each side, from the outer side of the condyle to the outer side of the canine alveolus, be produced, it will be found that the rami diverge from each other at an angle of 35°. The alveoli, from the canine to the last molar, are almost in a straight line, with a very slight bend inward; they are parallel on the two sides, and are joined at right angles by the line of the incisor alveoli, which unites them in front. In Man, the size of the alveolar sockets increases in regular gradation from the central incisor backward: in the Gorilla the incisor alveoli are the smallest; next in size is the socket of the second premolar; those of the true molars and first prèmolar are about equal; while the largest and deepest depression is that for the great canine. The anterior surface of the jaw exhibits as strikingly the entire absence of chin, as does the same region in animals much lower in the scale of organization. The external surface of the symphysis, curving downward and backward from the alveolar border with a gentle convexity, is destitute of any median vertical ridge, and of all transverse rising or tuberosity. The mental foramen is situated below the first premolar tooth—not the second, as in Man, the Chimpanzee, and the Orangs. In one of the specimens described by Professor Owen, it was double on the right side, a smaller opening existing in front of the principal, and two or three much smaller foramina were observed behind. In Man, the 'foramen mentale' is always single. In the Gorilla, the opening is placed a little nearer the lower than the upper border of the mandible. The outer walls of the incisor and canine alveoli are slightly protuberant, as is also that occupied by the anterior root of the first premolar; corresponding depressions mark the interspaces. The external surface of the horizontal ramus is flat, but becomes slightly convex near the lower border; along the outer margin of the molar sockets is a thin ridge of bone, and beneath it a shallow longitudinal depression; but the external oblique ridge is absent in the Gorilla, and although there is a slight protuberance below the outer anterior commencement of the vertical ramus, the degree of elevation is less than in the human subject. The vertical extent of the horizontal ramus, instead of diminishing as it approaches the ascending portion of the bone, increases in the Gorilla. The vertical ramus commences anteriorly, as in Man, by two ridges; the outer one forms a platform of bone, which extends outward beyond the last molar alveolus: the strong inner ridge commences from behind that socket, but in its upward course it presents an angular deflection, which is not present in Man; this ridge joins the outer one after it has formed the anterior boundary of the well-marked crotaphite fossa. The anterior border of the ascending ramus is vertical for two-thirds of its extent; it then gently curves backward, so that the point of the coronoid process is considerably posterior to the fore part of the base of the ramus—not on the same vertical line with it, as in Man. The concavity dividing the coracoid from the condyloid process is proportionately deeper than in Man. The inner end of the articulating condyle is the larger; it also differs from human structure in the want of definition in the posterior portion of the articulating surface, which is insensibly lost on the neck of the process. The angle of the jaw may be said to be absent in the Gorilla; for the lower border of the horizontal ramus passes, by a regular convex curve, into the posterior border of the ascending. On the inner surface of the latter are four or five tuberosities, with intermediate depressions for the attachment of the pterygoid. The internal surface of the symphysis is marked in its lower fourth by a rough, oval, shallow depression, divided by a median vertical ridge, which terminates below in a broad transverse ridge extending backward, and limiting the extent of the bone in this direction. In one jaw of an aged Gorilla we have had an opportunity of examining this ridge was produced backward, in the form of a large triangular process. The spinæ mentales on the inner surface of the symphysis are absent in the Gorilla. The inner surface of the horizontal ramus is smooth; it is not abruptly overhung by the inner margin of the molar alveoli; as in Man, neither does it exhibit the internal oblique ridge which is so characteristic of human structure—a slightly roughened longitudinal tract beneath the last two molar sockets takes its place in the jaw under consideration. The inner surface of the ascending ramus commences by a sudden but slight sinking of the surface. It is divided into two portions by a ridge which leads from the anterior internal ridge before described to the condyle; the upper and smaller surface is deeply depressed for the insertion of the great crotaphite muscle, (crotaphite fossa;) the lower presents about the middle of the ramus the opening of the dental canal. This is smaller than in Man, and its internal margin is not produced backward. We have already alluded to the more numerous projections for the insertion of the pterygoid muscle on the inner surface of the posterior boundary of the ascending ramus in the mandible of the Gorilla."

(To be continued.)

AN ANOMALY.

BY GEO. T. BARKER, D.D.S.

We were taught when very young that there were no two objects in created nature that were *exactly* alike, and that this dissimilarity existed to a great extent in each and every man, and particularly was it observable in his perceptive qualities, that two persons, and indeed a great number, could witness the same inspiring scenes, or hear the same thrilling words of eloquence, and that each one would, in describing them afterward, present them in a different manner and in totally different language. All this we heard, remembered, and believed, until the November number of the *Vulcanite*, 1860, came to hand; then it was we became a doubter, for we found by careful comparison that in two reports of the American Dental Convention, one for the *Vulcanite*, by Dr. B. W. Franklin, and the other for the September number of the Dental Cosmos, by ourselves, that in twenty-five reports, of different speakers' remarks, not only the same thoughts had been caught, but the same language was used to express them. In every instance the communion of *mind* and *mind* did not continue constant with each speaker, as some reports are slightly changed and altered; but we will present instances. We commence with the remarks of Dr. Hurd, (page 88 of *Vulcanite*, 109 of Dental Cosmos,) which are the exact language of our own, as far as they go, three lines being stricken out. Also the same with the remarks of Dr. Taft, on same page, with the exception of the omission of a few unimportant words. The next, remarks of Dr. W. B. Roberts and Dr. Atkinson are word for word the same as our own, showing the connection of *mind* and *mind* was unbroken. The next remarks of Dr. Atkinson (on page 90 of *Vulcanite* and 112 of Dental Cosmos) we *think* must have been copied from our own, as we are indebted to a private letter from Dr. Atkinson for that report, as every dental reporter is aware of the impossibility of fully reporting that gentleman; it has, however, been "clipped" for the *Vulcanite.* We might also refer to the next remarks of Drs. Dodge and Westcott, (page 91 *Vulcanite*, 113 Dental Cosmos,) and would particularly call attention to the *verbatim* reports of the third day afternoon, and the fourth day morning sessions; an instance.

Dental Cosmos, pp. 119, 120.	Vulcanite, pp. 95, 96.
"Dr. Dwinell said, in cases of exposed pulp, he classifies his patients, in some, filling over the pulp, but when inflamed, destroys them; where they are slightly exposed, treats with camphor or chloride of zinc, allowing it to remain a short time; fills the cavity, and cannot recall a single instance of failure.	"Dr. Dwinell said, in cases of exposed pulp he *classified* his patients,—in some filling over the pulp, but when inflamed, destroys them; where they are slightly exposed, treats with camphor or chloride of zinc, allowing it to remain a short time, fills the cavity, and cannot recall a single instance of

Considered one of the prominent offices of the pulp was to furnish secondary dentine, as its first office was to build the tooth. He alluded to specimens in his possession where large portions of secondary dentine had been deposited. For treatment of exposed pulps sometimes uses the arsenious paste, but usually prefers the following practice: dries out the cavity perfectly, applies a small portion of creosote, and with a nerve broach breaks up the attachments of the pulp in the canal; by this motion promotes absorption of the creosote, and so continues the application of the creosote and broach until he reaches the apex of the fang; this method gives no pain. He usually fills immediately, and has never had any subsequent trouble. Thought a tooth was much injured by the destruction of the pulp, and in many cases has left partially decayed dentine in the cavity as a protection, which has been subsequently restored, the tooth and pulp remaining perfect.

"Dr. Wetherbee said, observation had taught him the impracticability of trying to preserve exposed pulps, as they died in every case that he had attempted so to do; stated his objection to such practice. When he treats the pulp and fills the fang, alveolar abscess never occurs, but sometimes has this condition when the pulp dies; spoke of several interesting cases; remarked, the secondary dentine which is found in the teeth of old persons takes fifteen or twenty minutes to be deposited."

failure. Considered one of the prominent offices of the pulp was to furnish secondary dentine, as its first office was to build the tooth. *In* treating exposed pulps, sometimes uses the arsenious pastes, but usually prefers the following practice: Dries out the cavity perfectly, applies a small portion of creosote, and with a new broach breaks up the attachment of the pulp in the canal. By this motion of the broach, promotes absorption of the creosote, and so continues the application of the creosote and broach until he reaches the apex of the fang; this method gives no pain. Thought a tooth much injured by a destruction of the pulp, and in many cases has left partially decayed dentine in the cavity as a protection, which has been subsequently restored, the tooth and pulp remaining perfect.

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In the report of Dr. Dwinell the two words italicised are *original*, being substituted for classifies and for; a few words are also omitted in both. We would ask a reference to the remarks of Drs. Taft, Westcott, Wetherbee, and Rogers at the same time.

In conclusion, we respectfully remark, as the facts are before the profession, comment is unnecessary.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEO. J. ZIEGLER, M.D

"*Lecture on Dentition and its Derangements.* By A. JACOBI, M.D., Professor of Infantile Pathology and Therapeutics in the New York Medical College. — To a truly scientific physician, nothing is more evident than that the physiology and pathology of the human organism have not been sufficiently elucidated. The medical sciences are by no means completely developed; they never will be, for they combine a knowledge of all the varied and intimate physiological functions and obscure pathological changes of the physical and mental organs of the human frame; they never can be, for their basis, the human organism, will and must undergo changes and further development. Those powerful minds who have done most, and are still in our times working most successfully for the advancement of medical knowledge, have been and are still the first to admit the truth of this proposition, and are the first, also, to acknowledge that more remains to be done than has been done hitherto. Fortunately, however, there are a large number of subjects so well known and so clearly understood, that even in this ever-changing science we are enabled to point out the way to further investigations, to arrange in mathematical order our conclusions, and win thereby for medical science not only a place among the so-called exact sciences, but the acknowledgment of educated men, that it is the noblest and most comprehensive among them.

"Having the honor, as I believe, of being the first in this country to teach infantile pathology as a distinct and fully independent branch of medical education, I did not deem it proper to begin with a subject liable to be misunderstood, mistaken, or misconstrued. A subject of this description I have therefore determined, in this preliminary course, to consider at length, viz., the physiology and pathology of dentition—a subject which is but imperfectly understood. But there should be nothing mysterious about it; the process of the early formation and the final development of teeth is well understood, and on this safe basis we are able to rest our conclusions relating to pathology and therapeutics. So little, however, can we rely on the correct interpretation of facts by observers, that even here we shall have to contend with prejudice and ignorance.

"You know that among the public at large, even among the educated part of the community, teething is regarded as one of the two scapegoats of all the diseases of infantile age. Teething and worms are among mothers acknowledged as the universal and all-powerful sources of disease. Whenever an innocent ascaris or a puny oxyuris is observed in the fæces of a child, worms are, for years to come, considered as the undoubted cause of any disease that may occur. Teething, a normal, physiological development, taking place at an age which for many reasons is subject to a large number of diseases, has a strong hold on the imagination of frightened maternal minds. The first dentition generally occupies the first two years of early infantile life; a period in which the child is peculiarly liable to diseases both numerous and frequently of a dangerous character. As the protrusion of a tooth (and in the average a tooth will cut every month) is a remarkable phenomenon, and is something new and visible to the eyes of even the most short-sighted, it is believed to be the cause of every unfavorable occurrence in early life. A mother will bring to you her child, thin, emaciated, and anæmic, with sunken eyes and the wrinkled physiognomy of old age, and tell you that she is well aware the poor thing is suffering from teething, and that therefore nothing can be done to alleviate its sufferings. She will never be convinced that her child is dying from her own neglect; but she has allowed a slight catarrh of the intestines, perhaps, to degenerate into incurable ulceration of their follicles. Thus you will learn that ignorance and prejudice will attribute all, or nearly all the diseases of infantile age to a normal process. To the same cause are attributed inflammations of all the external and internal organs, the brain and its membranes, air passages and lungs, mouth, throat, stomach, and intestinal canal; as also cough, vomiting, diarrhœa, and dysentery, derangements of the secretion and emission of urine, chronic eruptions of the skin, convulsions and paralysis, exudations of serum, and extravasations of blood in any of the numerous organs of the infantile body. Teething is thus considered the efficient cause of most of the terrible diseases which prove fatal to thousands of the rising generation. I can assure you that the readiness to attribute all the diseases of infantile life to teething has destroyed more human beings than many of the wars described in history. For, though parents are so much impressed with the belief of the dangers of teething, still they never think of attempting to save the lives of their children by counteracting the supposed life-endangering power of a normal process.

"The common supposition that teething is a predisposing cause of disease, nay, even a disease in itself, prevails over all civilized and half-civilized countries. What is now, however, the belief of the public, has been the conviction of the medical world through centuries, almost down to the present time. General experience shows that the persuasion of the scientific world, after having been given up to make room for more correct opinions, has remained in the public at large; and it is to be feared that it will not soon be removed. And it would be fortunate if this prejudice were confined to the public. But, unfortunately, it still lingers in the medical profession, and it is for this reason that I have dwelt upon it so lengthily. Nothing is more common, than to hear doctors of medicine, young and old, in cases of infantile disease, diagnosticate teething, after mother and nurse have done so before; and nothing is more frequent than to be told that the death of a child was the consequence of dentition. I have seen in this city a certificate of death, in which the direct cause of the death of a child five years of age, with his jaws full of teeth, was attributed to teething. Consider for one moment the absurdity of the conclusion that a normal, physiological process is fatal to the existence of a living being. Who has ever ventured to assert that menstruation, or pregnancy, or the climacteric years are the direct causes of death? It is equally absurd to assert it of dentition; yet such statements are daily made by physicians. According to the census of England, in the year 1857 there were in the United Kingdom 3992 deaths from teething, 3791 of which occurred in children of less than two years; 201 in children of from two to five years. Between the years 1845 and 1850 there have died in London, according to the report of the registrar-general, no less than 3466 infants from teething and the disorders caused by the general irritation attending dentition: the total number of deaths from all causes being 258,271, giving the proportion of one death from teething to seventy-four from all causes. And the census of the State of New York offers the following numbers: in the whole State there died, in the year 1855, from teething, 626 children; of these certificates of causes of death, 254 were made in New York County, 132 in Kings, 35 in Erie, 24 in Rensselaer, 41 in Albany, 30 in Monroe. It is not stated whether a part of those unfortunate children who died from teething had not the full contingent set of teeth of first dentition.

"Let me first state that teething, in the common acceptation of the term, is not the gradual development or formation of teeth, but the time and act of their penetrating the gums. This takes place, in the average, beginning from the sixth, seventh, or eighth months to the twenty-fourth or thirtieth month of life. I may also in this place enumerate the symptoms which are often observed during or (shall I say?) in consequence of teething. In a large number there are no symptoms at all. The first and the second, and perhaps all the other teeth, will cut, and without any disease or trouble of any kind. In others, the mouth is hot and red, with the exception of those thin parts of the gums below which the teeth are visible; even the lips have a higher color and temperature; the child puts its fingers, or anything in its reach, into the mouth; is pleased with having its gums rubbed; bites the nipple when sucking; or if the mouth is inflamed and aphthæ are present, and the tonsils swollen, it is disinclined to take the breast, trying it often, but just as often loosing its hold. At the same time there is a copious salivation, the saliva being usually tough, viscid, and more like mucus than saliva. The child has all the usual symptoms of slight or moderate fever: warm hands, a rapid palse, flushed or pale face, intense thirst, vomiting, constipation, or diarrhœa with green mucous passages. The most common of these is diarrhœa. Pain in the bowels is very common, as digestion appears disturbed; tears are secreted abundantly; the blood-vessels of the conjunctivæ are injected. A slight cough, hoarseness, pain in passing the scanty urine, secretion from the nose, are not unfrequent occurrences. Such symptoms are apt to disappear entirely in three or four days or a week, with or without treatment. But sometimes the symptoms are graver from the beginning, or they are aggravated by endemic or epidemic influences, or the peculiarities of individual dispositions to disease.

"In some cases the fever will not disappear so readily without leaving grave consequences; the pulsations of the heart and arteries will not decrease in number; the action of the heart will not be of less power and impetuosity than before; the tongue, mouth, and lips remain dry; thirst so extreme that you cannot take the tumbler from your little patient's hands before he has completely emptied it. Respiration is accelerated, numerous, short, and superficial. The eye is sensitive to the light; headache becomes manifest from the corrugation of the muscles of the eyebrows, and the peculiar aspect of suffering. Excretions and secretions are scanty, fæces dry and hard, urine red. Vomiting and diarrhœa, if they had been present before, now cease. The child will appear more depressed, but easily excited; slight local convulsions will prove the introduction to severe attacks, which generally terminate fatally. In other cases the tongue is hard, dry, black; teeth and lips of the same color, corresponding with the symptoms characteristic of typhoid fever. Such cases are very likely to terminate fatally. The last symptoms in such cases are paralysis of some abdominal organ, especially of some part of the intestine.

Another train of symptoms attributed to teething is the following: A child is feverish; pulse frequent and small; temperature of the extremities considerable; but the face is pale from the beginning; lips and mucous membrane of the mouth hot, red, and dry; tongue covered with a grayish-white fur; restlessness; anxiety; respiration hurried and short; vomiting and diarrhœa. Frequently such a depression of the general strength is combined with these symptoms—the more so as the most intense and often repeated vomiting and diarrhœa are very apt to exhaust the little patients—that the child dies in a day or two in convulsions consequent upon inanition, and local or general paralysis. In a certain number of cases the principal symptoms cease, and the child recovers. In a certain other number vomiting will stop, but the diarrhœa continues. The deluded mother, who felt a little uneasy at the severe character which teething seemed to have assumed, is gratified, after the main symptoms have passed by, to find that her child is suffering from diarrhœa only, and that in this manner teething will be made easy and comfortable. But, alas! this deception on the part of the mother is too often fatal to the child. The diarrhœa is allowed to go on for days and weary weeks; the digestion becomes hopelessly destroyed; the abdomen immensely distended with gas; the mesenteric glands swollen and impermeable to chyme; the catarrh and over-secretion of the glandular follicles of the intestine lead to deep ulcerations of the intestinal canal; the diarrhœa becomes also more frequent, serous, mucous, or bloody: the arms and legs of the little sufferer dwindle away; and the countenance becomes emaciated and senile. The scene closes with a consoling certificate from some doctor or druggist, affirming that teething was the cause of death. Thus millions of infants are destroyed by ignorant, prejudiced, and incorrigible advisers. I say incorrigible. I know that mothers will always consult their prejudices first, the prejudices of their neighbors next, perhaps at some late time common sense, and finally they may seek the advice of an educated medical man. I know that a mother who has just consigned a beloved child to the grave, will go home with throbbing heart, and repeat the follies which cost her the child she has lost. If you remonstrate with her for neglecting the second, as she did the first, she will reply, Was not the child teething? Would you prevent the child from teething naturally? Is not teething necessary? Was it her fault that the child got teeth with difficulty? The true inference would be, that nature neglected much, and that it was greatly at fault in the matter of dentition. I once read the newspaper announcement of the death of a child, in which the parents, while inviting all their friends and acquaintances to attend the funeral, affirmed that, 'the Lord hauled the dear child up to heaven by the teeth.' Now, in this case, neither the father nor the mother was at fault.

"I shall not, in this place, proceed to point out the other symptoms of diseases attributed, whether rightly or wrongly, to teething, as the symptoms of cerebral inflammations, of convulsions, of general and local paralysis. At a later period in this course of lectures I shall return to these subjects for practical purposes. It will better answer my design to give you a sketch of what dentition is, anatomically and physiologically, in order to show clearly the normal and abnormal course it may take. I shall thus be able to explain and *limit* the numberless complaints generally attributed to teething. If I can relieve your minds of the impression that dentition destroys the thousands and even tens of thousands of innocent beings who are yearly sacrificed in reality to the prejudices of other times, I shall be abundantly satisfied."—(*American Medical Times*, December 8th, 1860.)

"*Paralysis of the Portio Dura on both sides, from Disease of the Temporal Bones.*—In addition to the general interest of paralysis of the portio dura nerve, from disease of the trunk in its course through the temporal bone, there is in this case the singularity of its being equally affected on both sides. Dr. Todd states that he has seen but two cases in which it occurred spontaneously on both sides. In the vast majority of cases paralysis of this nerve is, except for the deformity it induces, of little serious import, as it is generally due to some disease in its course, or to a rheumatic affection, or possibly to conditions similar to those which occur in sensitive nerves producing neuralgia. It is very rarely the effect of cerebral disease, though it may be the result of intra-cranial pressure; *e.g.* by pressure of cerebral aneurism, as in a case narrated by Dr. Ogle in the last volume of the Medico-Chirurgical Transactions; but here, as in the case mentioned, the portio mollis will be equally compressed, and hearing on the affected side will also be—without any other symptom of disease of the ear, as pain, discharge, etc.—quite lost. The pathognomonic sign of paralysis of the portio dura, is paralysis of the orbicularis palpebrarum. Dr. Todd (Clinical Lectures on the Nervous System, Lect. iv.) writes, 'I cannot say that I ever saw an instance of complete paralysis of the orbicular muscle of the eyelid due to uncomplicated disease of the brain, and I have only seen a few in which the power of the muscle appeared to be enfeebled from that cause. When it occurs with discharge from the ear, especially if it be fetid, it is serious as a symptom of mischief extending from the tympanum to the aqueduct.' 'It not unfrequently happens,' writes Mr. Toynbee, ('Diseases of the Ear,') 'that the inner osseous wall of this canal (the aqueductus Fallopii) is incomplete, and thus the mucous membrane of the tympanum is in contact with the outer surface of the nerve. In cases of acute inflammation of the mucous membrane, therefore, the nerve often becomes affected either by prolongation of the inflammation from the mucous membrane directed to the nerve, or through the wall of the canal.' Mr. Toynbee relates several cases in which paralysis occurred temporarily during acute inflammation of the tympanum. The nerve is occasionally divided in opening abscesses over the parotid, the incisions being made vertically instead of horizontally. It is also often necessarily divided in removing tumors from the parotid region, although it is of the greatest importance to avoid injuring it, especially the upper part, by which the orbicularis is supplied. Again, when this nerve was thought to be the one affected in facial neuralgia, it was occasionally divided intentionally. In cases, in which the nerve is divided, the deformity is permanent, and causes great distress from inability to close the eye. It is unnecessary to allude further to the muscles affected and the appearances produced by this form of facial paralysis, except to state, that in these cases the buccinator is paralyzed, causing a hanging of the cheek, and interfering somewhat with mastication. This is not an early symptom, but increases as the affection continues. The other muscles supplied by the fifth, viz., temporal pterygoid, masseter, etc., are not affected. Speaking of the paralysis of the buccinator in paralysis of the portio dura, Dr. Todd says: 'It is not easy to find an explanation of this curious fact, which is equally true if the nerve first palsied be the fifth; as in cases of hemiplegia, in which the hanging of the cheek is due to paralysis of the buccal nerve (of the fifth) and the buccinator muscle.' The following case was one in which the affection was evidently due to disease of the nerve in the aqueductus Fallopii.

"A boy, aged five, was admitted a patient, under the care of Mr. Lawrence, in St. Bartholomew's Hospital, for discharge from both ears, attended with deafness and complete paralysis of the muscles supplied by the facial division of the seventh nerve on both sides. As the boy was quite deaf, it was impossible to get any clear history from him, and very few opportunities occurred to obtain it from his friends. It was ascertained, however, that he had been in the Fever Hospital for eight months (?), and that the paralysis had followed some exanthem for which he had been in that hospital. He seemed in pretty good health, and walked about the wards, though lame from some distortion of the left tibia. He was fortunately a very intelligent child, and, though he could not hear, he would endeavor to imitate motions made to him. Thus, when the nurse, after obtaining his attention by motion, closed her eyes, he attempted to do the same. The only result following his effort to do so, however, was, that the upper lid fell a little, and the cornea was carried upward under it so as to be quite covered. Although the lid fell slightly, there did not appear to be the least action of the orbicularis: no winking. The gentleman to whose kindness we are indebted for the notes of this case, states: 'I saw him asleep to-day, and his eyes were not closed, but half open, and looking straight forward as if he were awake.' This is interesting as regards the question of the position of the eyes during sleep. Sir Charles Bell held that in sleep the eyeball was directed upward; but, as Dr. Todd states, it is so probably only during strong contraction of the orbicularis, or, as in the case here related, during an effort at contraction. He cannot frown or move his mouth in the least, nor imitate any of the motions made by the muscles of the face. When he tries to draw his mouth to one side he moves the lower jaw altogether, and thus produces the effect by the muscles of mastication. He speaks very imperfectly, as his lips cannot assist in articulating labials. He can move his head well, and there does not appear to be any paralytic affection elsewhere. In Dr. Todd's work, already alluded to, is a very interesting case, reported by Mr. Holthouse, of double paralysis of this nerve, in which the symptoms produced are described in detail. This patient was a man aged forty-two. He also was deaf, and the disease apparently proceeded from an affection of the nerve, in its course through the temporal bone.

"The following quotation from Romberg ('Diseases of the Nervous System,' Sydenham Society's Translation) gives a good account of what may be called the effect on the physiognomy of this form of double paralysis: 'The effect is different when both facial nerves are paralyzed. In two cases that have recently come to my notice, the face presented no disfigurement beyond the eyes being distended; in one of the patients, however, a man aged forty-three, the smoothness of the forehead and the absence of every kind of furrow was remarkable. The absence of expression in speaking was yet more conspicuous in the beautiful countenance of a young lady. One of the patients was very sensitive on this point, and termed it his greatest misfortune that he was forced to be joyful or sad without making any demonstration of his feelings to his fellow-creatures. In a girl of sixteen, in Dupuytren's 'Clinique,' who was affected with bilateral paralysis, there was no distortion, but a pendulousness and entire absence of motion was perceptible in all the features. The eyelids only half closed, the lips stood apart, and played backward and forward from the impulse of respiration. The expressive countenance bore a serious character, which contrasted forcibly with the patient's frame of mind. She was heard to laugh aloud, but the laugh appeared to come from behind a mask.' "—(*Med. Times and Gazette.*)

Modus Operandi of Anæsthetics.—" At a late meeting of the Academy of Sciences, attention was drawn by M. Lallemand to a series of experiments undertaken by MM. Perrin and Duroy, in order to obtain a comparative estimate of the effects of alcohol, carbonic acid, and the various anæsthetics, on the nervous system of animals. Three ounces of alcohol mixed with an equal quantity of water were given in three equal doses, at a quarter of an hour's interval, to a large-sized dog. After the lapse of an hour the animal was in a complete state of intoxication, the muscular system being relaxed, the skin and conjunctivæ perfectly insensible to the touch, the pulse one hundred and twenty, and the respirations twenty-two per minute. The posterior arches of the last three dorsal vertebræ were now removed, and the spinal marrow laid bare for about two inches of its length. It was then found that the anterior and posterior columns of the cord, and the anterior and posterior roots of the spinal cord, could be pricked, seized with forceps, and pinched or pulled, without eliciting any symptom of sensibility or muscular convulsion. The paralysis of the spinal nervous system was found to be complete. The animal was then let alone for four hours, and at the expiration of that period, the alcoholic lethargy having considerably subsided, the same excitatory manipulations were resumed, and the cord was found to have regained its normal susceptibility, as proved by the appearance of the physiological manifestations usually attendant upon the employment of local stimulation. In order to ascertain the physiological effects of carbonic acid, the following experiment was performed: The same process of vivisection having been accomplished—namely, the removal of the arches of the last three dorsal vertebræ—the animal was made to inhale a mixture of carbonic acid gas and watery vapor, and at the end of ten minutes became quite motionless and senseless, the arterial blood having assumed a dark venous hue. It was then found that the posterior columns of the cord and the posterior roots of the spinal nerves could be pricked, pulled, or pinched, without the production of any sign of sensibility on the part of the animal; but that if, on the other hand, an anterior root were pricked, or the anterior column of the cord stimulated, convulsive movements were produced in the dog's hind quarters. Moreover, that if the sciatic nerve were bared by incision and irritated, the muscles to which it is distributed were immediately thrown into a state of spasmodic contraction. In other experiments oxide of carbon was substituted for carbonic acid with the same results. The deductions drawn by these physiologists from their recent course of investigation tend to establish the fact that alcohol, chloroform, and their 'kindred spirits,' act primarily on the nervous centres by *their actual presence within the nerve substance;* whereas the carbonic gases act primarily on the blood only, by the conversion of the arterial into venous blood: the difference of their modes of action being, that in the first case the anæsthesia is direct and primitive, and due to the immediate action of the toxical agent on the nerve matter; in the second, it is indirect and consecutive, depending on the action of the modified blood upon the nervous centres."—(*Paris Correspondent of Lancet.*)

"*Atresia Oris.*—Many cases of the disease atresia oris, or closure of the mouth, present themselves to the notice of those attending the medical charities of Calcutta. It would appear that there are two forms of this disease; one in which the mucous membrane covering the front of the ramus of the lower jaw has been inflamed, and subsequently contracting, causes closure of the teeth, without narrowing to any considerable degree the opening of the lips. If the history of these cases be traced, it will be found that they have generally resulted from the cutting of the last molar or wisdom tooth having caused the gum to inflame. The other kind of closure of the mouth results from the indiscriminate and excessive use of mercury by native practitioners. The ulceration of the mucous membrane lining the gums and cheeks succeeds to the ptyalism so produced, and, on the inflammation subsiding, the opposed ulcerated surfaces unite and cause the jaws to be closed, and the opening of the mouth to be contracted. Both Dr. Fayrer and Dr. Partridge are accustomed to remedy the first accident in the same manner, by dividing the firm, contracted band of mucous membrane with a knife, (one of the tenotomy knives is generally found to be most convenient,) and then forcing open the jaw by an extending trivalve speculum. With a little attention to dressing, this plan generally succeeds. In the other species of atresia oris a similar plan was at first adopted. The adhesions were divided by a narrow knife, the jaws forced open by the speculum if necessary, and lint dipped in oil was pushed in to separate the recently cut surfaces. But the disease treated by this way alone had so great a tendency to relapse, that in the recent case Dr. Fayrer, in addition to the above, divided the skin at the angles of the mouth in a direction downward and outward, and though at first this occasioned a most lachrymose expression to the man's countenance, it ultimately perfectly succeeded, and he left the hospital cured."—(*Indian Lancet, and Dublin Med. Press*, October 17, 1860.)

Poison Apparatus of Rattlesnakes.—In the report of the proceedings of one of the October meetings of the Phila. Acad. of Natural Sciences, (*Med. and Surg. Reporter*,) it is stated that "Dr. S. Weir Mitchell made a very interesting communication on the subject of the poison of the rattlesnake. After adverting to the history of the various works on venomous reptiles, he proceeded to explain the anatomy and physiology of the poison apparatus of the rattlesnake. He showed first, by the aid of magnified drawings of the parts, the bony structure of the jaw, and the manner the various parts were articulated together, so as to keep the poison fang in such a position, when not required for use, as not to interfere with the feeding of the snake, and then the manner in which it was pushed forward and brought into the position most favorable for striking with effect. He then explained the action of the various muscles by which the fang was drawn back and thrust forward, and showed how one of these, while erecting and fixing the fang, at the same time, as soon as it had pierced the animal bitten, compressed the poison gland and forced the poison out, either through the duct leading through the tooth to the bottom of the wound, or beside it, and into the surface of the same. He then explained the position of the poison gland and its duct, and showed the manner in which this duct communicated with the one leading through the tooth, and the manner in which the poison was prevented from flowing out when the fang was not erected. When the fangs are torn away, they are soon replaced by others; indeed, they appear to be regularly shed by the animal, so that it gives no security against a fatal bite that the fangs have been removed.

"The poison is contained in the poison gland in considerable quantity, as much as ten to fourteen drops having been procured from a single one from a snake about four feet long. It is of a pale greenish-yellow color, and its activity is not impaired by keeping for years. It may be swallowed, if the skin of the mouth and throat be not broken, with impunity. Its poisonous properties are not destroyed by boiling or freezing. After it has been dried, it may be again restored to all its virulence by again dissolving it in water. There appears to be no absolute antidote to it. The most successful plan is to give some powerful stimulant, such as spirits or ammonia. When spirits are given, it is necessary to keep up the stimulation *fully* for a considerable time. The quantity sometimes taken, without producing intoxication, is very great; in one case specified, three pints of strong spirits were given. The doctor remarked, however, that at one of our military posts it was very common for the men to be bitten by rattlesnakes so long as the whisky cure was used; but when a different and nauseous stimulant was substituted, the bites rapidly diminished in frequency"

Relative Expansibility of Metals.—In an article on the practical value of the stereoscope, copied from the *London Pharmaceuticul Journal* into the *Scientific American*, the following remarks occur on this subject: "It has been found that wires of different metals, drawn through the same plate, are not all of the same thickness, for they are of different degrees of elasticity, and after being drawn through the plates they expand to different amounts. This expansion is proved by the fact that, with the exception of gold, no wire can be drawn through the same aperture through which it has been pressed. Silver requires the least force, but the expansion caused by elasticity continues for several weeks. It appeared probable to Professor Dove that in stamping metals something similar would take place, and that medals of different metals, stamped in the same die, would be of different sizes. This would be most readily seen in those medals in which the impression is symmetrically arranged in reference to the edge, as is the case with the medals of the French Exhibition, in which the coat of arms encircles the French eagle in the middle. One of these in silver and one in bronze were placed in the stereoscope, the eagle being fixed in the middle. After some time, the stereoscopic combined medals were seen in the form of a hollow escutcheon, and of the color of an alloy of the two metals. Evidently the reason of this lies in the nonius-like shifting of the individual lines of the impression. This same result was also obtained by the professor with large gold and silver medals, which were kindly entrusted to him by the royal mint in Berlin. It was probable that medals obtained by casting would show the same thing, and this was found to be the case with tin, bismuth, and lead, the casts in which were beautifully executed by Professor Kiss. The account from which the above is derived appeared in *Poggendorff's Annalen*, and also in the *Philosophical Magazine* for the present month. Hiero's crown led to the use of specific gravity to detect an adulteration. The stereoscope is a new means."

Teeth of Elephants.—The following remarks on the teeth of the elephant occur in the account of that animal in *Cassell's Natural History:* "The head of the elephant is also ponderous from its enormous tusks, which often attain the length of six feet, and sometimes even more. They are implanted in *alveoli*, or sockets, in the upper jaw; and if we examine them we shall find them occupying the whole anterior portion of the face. The proportions necessary for these *alveoli* or sockets of the tusks render the upper jaw so high, and so much shorten the bones of the nose, that the nostrils are found in the skeleton toward the upper part of the face; but, in the living animal, they are prolonged into the well-known proboscis or trunk. 'The largest tusks,' says a traveler, 'I ever saw in Bengal, did not weigh more than seventy pounds.' But there are some in the India House, and other places, that weigh more than one hundred and fifty pounds. 'Vartomanus also saith,' to quote Topsell, 'that he saw, in the island of Sumatra, two elephants' teeth which weighed three hundred six-and-thirty pounds.' A tusk, sold at Amsterdam, is said to have weighed three hundred and fifty pounds.

"In the development of these parts the ivory is deposited by successive secretions of a vascular pulp, in very thin layers from within. An elephant's tusk is well known to be hollow; this cavity, then, is the seat of the pulpy substance, in which are sometimes found musket-balls and other foreign bodies. These have entered when the ivory was in its soft state, and have become firmly imbedded in the hardened tusk. How vascular this part is, is evident from the fact, that an elephant at Exeter Change nearly bled to death from the laceration of the vessels of the pulp, contained in the cavity for the purpose of supplying constant internal additions of successive laminæ, as the tusk is worn down externally. * * * * The only teeth which the elephant possesses, with the exception of the ivory tusks, are the grinders. In their general structure they closely resemble those of the rodents, being composed of osseous layers, disposed vertically, enveloped in enamel, and consolidated together by a substance termed *cortical.* Wearing down, as they do perpetually, from their grinding upon one another in reducing the food to pulp, there is an obvious necessity for their renovation. In the rodents, the teeth, as they wear down, are perpetually growing; and so energetic is this law, that if a tooth be lost by accident, its opposite fellow, having no counterbalancing detrition, grows to an enormous size, so as often to prove an impediment in mastication. In the elephant the teeth are lost and renewed in regular succession; but the new tooth does not succeed by pushing out the old one from beneath, which is the usual mode, but by rising behind it, and pushing it forward in proportion as it wears away, till at last it is expelled altogether. Hence, as Cuvier observes, there is at first only one grinder at each side, above and below, and presently two; the loss, however, of the first reduces the number again to one, but presently another makes its appearance to expel its predecessor. The number of times this change takes place in the life of an individual is uncertain; but the process is slow, and six or eight of these revolutions may be the extent.

"The ivory tusks are changed only once, the permanent ones succeeding on the loss of the milk tusks, which fall out early, and are very small.

"A difference is obvious between the molars or grinders of the Asiatic and African elephants. In the former they are disposed like a waving ribbon, folded backward and forward on itself, so as to cross the crown of the tooth. In the latter, the molars are irregularly lozenge-shaped. There are, however, other distinguishing characteristics between the two species. If we look at their skulls we find the forehead of the Asiatic concave, that of the African convex, and altogether of a rounder outline. The tusks are also larger, and the *alveoli* or sockets in proportion—circumstances which give a very different expression to the physiognomies of the living animals. * * * * It is said that in Ceylon scarcely two in a hundred have tusks."

MISCELLANY.

It is well known that whenever a special predisposition to abnormal action exists in the vital economy, a very slight thing is sufficient to act as an exciting cause of disease. This is especially the case in many affections of both an organic and dynamic character, examples of which we have occasionally presented, among which was the apparent development of cancer from the irritation produced by rough or decayed teeth. Additional evidence upon this point is furnished by the following cases from the clinical report on epithelial cancer, by Mr. Jonathan Hutchinson, in the *Medical Times and Gazette:* "George P., aged thirty-six, a dark, sallow, but healthy-looking man, was admitted, December 29, 1853, into St. Bartholomew's Hospital, under the care of Mr. Stanley, for a cancerous ulcer in the middle of the right margin of the tongue, about an inch in length, half an inch in width, and half a line to a line in depth. The base was irregular, not granular, nor distinctly nodular or warty; it was clean and moderately florid, and while in the hospital, and being guarded from the teeth by an ivory cover for them, it became level, and skinned over very thinly, yet enough to prevent its bleeding when lightly rubbed. The borders of the ulcer were upraised with a somewhat lobed or glandular surface. This was especially the case with the upper border, which, occupying a portion of the dorsum of the tongue, overhung a little the adjacent mucous membrane. The elevated border felt firm, tense, and nearly hard; the base of the ulcer was equally so, and these characters were evidently derived from morbid deposits at and for about two to three lines beyond the ulcerated surface. At the border this deposit did not involve the very surface layer of the mucous membrane, which was tensely stretched over it, but discernible with its small vessels. The rest of the tongue appeared to be all healthy One lymph-gland by the side of the facial artery was slightly enlarged, firm, but not hard. The teeth by the side of the ulcer were not rough, but neither were they clean, and, as already said, the ulcer became smoother and skinned over when protected from them.

"He said that nine months previously his tongue had become sore through the 'fretting' of a decayed tooth at this part. He allowed the tooth to remain for six months, the sore extending all the time until it had reached its present dimensions. At length, three months ago, the tooth was drawn; the sore remained, and he was not aware of any change in its character. It was always very painful, and the pain extended from it over the whole cheek and the side of the head and jaw. Many of the cervical lymphatic glands under the right side of the jaw had been enlarged, but they had subsided two months previously; and the one by the facial artery had only in the last week been enlarged. His great aunt died of cancer of the throat, (sufficiently proved;) but no other relative was known to have had cancer. He never had any syphilis or well-marked struma."

After an ineffectual effort to remove the disease by constitutional treatment with iodide of potassium, the part was excised, the troublesome symptoms subsided, the patient recovered, and is still in good health seven years after the operation.

"Caroline C., aged thirty-five, a married woman, and the mother of three children, was admitted, February, 1855, into Middlesex Hospital, under the care of Mr. De Morgan. She was subject to dyspepsia; but during the last few years she had been in rather better health. She had broken teeth on the right side of her mouth, which had irritated the tongue. Two years before her admission she noticed that her tongue was sore, and a year ago a lump began to form in it. Mr. De Morgan removed the right side and tip of the tongue by ligature. He made an incision in the median line beneath the jaw, and dissected his way upward, and then, having passed the ligature, tied it over a wooden bridge, which was fixed as a sort of tourniquet. In ten days or a fortnight it had separated. On March nineteenth both the wound below the jaw and that of the tongue were quite healed. There was then, however, suspicious hardening about the cicatrix. The disease soon afterward returned in the stump, and in the course of a few months the woman died."

"Daniel H., aged forty-six, was admitted, November 2d, 1860, into St. Thomas's Hospital, under the care of Mr. McMurdo. He stated that twelve months ago he experienced a soreness of his tongue on the left side, which he imagined was due to irritation of some decayed teeth. Several had been removed in consequence, but nothing was done for the tongue. The ulcer in the latter grew more painful, and five months ago the glands below the jaw began to enlarge. There is at present an ulcer on the left and under side of the tongue. This half of the tongue is hardened, swollen, and very painful; and he speaks with great difficulty from pain in moving the tongue, which is also not able to be much moved from being swollen, and tied down by the ulceration and induration. He suffers a great deal of pain. His health has generally been good, and he says that, except for the local distress, he feels well. He is, however, very sallow, haggard, and emaciated."

Further illustration of the operation of the etiological law just referred to in the preceding, is afforded by a case of eclampsia, reported in the *Medical and Surgical Reporter*, under the treatment of Dr. S. W. Butler, in the Philadelphia Hospital, which was excited apparently by the extraction of a tooth, as, according to the history given by the patient, a female, aged twenty, the "epileptiform convulsions first came on when sixteen years of age, in a dentist's office, after having a tooth extracted. She continued from that time to have them very frequently, often several times a day."

The following account of a somewhat rare zoological specimen is given by the *Med. Times and Gaz.*: "A young male example of a very scarce and little-known animal of the swine family—the babirussa—has just been received by the Zoological Society, and is now placed in their gardens in the Regent's Park. The adult babirussa is remarkable for the extraordinary development of his tusks, which turn upward and backward, and form a semicircle nearly meeting the jaws again. The whole contour of the animal is also very different from that of the true pig. The babirussa is a native of the Island of Celebes, in the Indian Archipelago, and obtained its name from the extraordinary idea of the Malays that it originates in a cross between a pig (*baba*) and a deer (*russa*). The present is believed to be the second individual that has been brought to Europe alive, a previous specimen, obtained by Sir Edward Belcher during one of his exploring voyages, having lived for a few weeks in the Society's gardens in 1841."

In the course of one of his instructive lectures on the therapeutic influence of rest, (*Lancet,*) MR. JOHN HILTON discusses the philosophy of the treatment of abscesses by evacuation in order to thus secure repose to the part affected, and the tranquillity essential to healthy action. Per contra, he refers to the difficulty of removing such affections where this course cannot be adopted, and gives the following case in illustration: "I might here, for example, remind you that, in a case of suppuration under the temporal aponeurosis, we sometimes experience great difficulty in curing it. This difficulty arises partly from the necessary movement of the surrounding structures, (temporal muscles especially,) and from our inability to reach the floor of the abscess. We know that if we open this abscess above the zygomatic arch, while the floor of it extends much lower down, the abscess is extremely tedious in closing, and the surgeon fails in his object; by-and-by Nature herself makes a hole by ulceration into the mouth, at the lowest point of the abscess, near the coronoid process of the lower jaw, and then the abscess or sinus closes. Such a case marks clearly the difficulty in which the surgeon is placed. Under these circumstances, and in such a case, it is better for the surgeon (instead of allowing Nature to be the sole agent in accomplishing the object in view) to pass his probe downward, through the aperture made above the zygomatic arch, toward the mouth, to feel the end of the probe through the walls of the mouth, and then to make a small aperture opposite the point of the probe, and in that way obtain an outlet at the bottom of the abscess; then surface coaptation, equivalent to rest, quickly takes place, and the abscess, instead of being tedious, comes to a rather speedy termination by 'rest.'"

In further elucidation of his views, MR. HILTON observes, that "in some small abscesses sometimes occurring in the face, cheek, or neck, which have opened by a minute ulceration through the skin, the aperture communicating with the sac of the abscess, I have found the best result from carrying out this principle of rest to the part. I have merely passed a small probe into the aperture in the skin for the purpose of keeping it open while collodion was being applied upon the dome of the abscess, so as to press the dome upon the floor of the abscess. In this way pressure and rest are secured, and by coaptation the parts are kept undisturbed; the process of healing then commences, and I think the patient gets well more quickly by this than by any other local method of treatment.

"Sinuses, then, are cured by the adoption of local rest; and I think that if surgeons, instead of affixing to every sinus the opprobrium of bad general health, would take into consideration the possibility of there being some special local disturbing cause associated with it, such as muscular or other movements, more success would result from a very simple plan of treatment by rest." Nevertheless due attention must be paid to the condition of the general system and the constitutional measures necessary to secure its healthy status, in order to insure the success of the local treatment.

In the course of a clinical lecture on scurvy, (*ibid.* Nov. 24,) Dr. Stephen H. Ward makes the following general observations on the physiognomy of disease, and special remarks on some of the peculiar objective signs of the disorder named: "My subject has led me into these reflections, for the brilliant eye and pale or hectic-flushed face of the consumptive; the puffed, waxy aspect of the victim of Bright's disease; the general capillary injection of face in pneumonia; the chlorotic aspect of amenorrhœa; the sallow, anæmic complexion and tired look of the sufferer from protracted ague, do not tell their tale more expressively than does the physiognomy of the patient affected with scurvy. The face of an individual suffering from advanced scurvy speaks distinctly of damaged as well as deficient blood. It is of a sallow, dingy, earthy hue, and looks also at times as if it were dirty; the conjunctivæ are clear and transparent, the eye usually bright, with dilated pupil, and the lips are bloodless. The countenance is generally passive and devoid of expression, though in some severe cases it expresses a sense of dread. Sometimes projection of one or both cheeks indicates the enlarged condition of the gums beneath. A peculiar fetid emanation, something like that of putrefaction, but distinctive, is the next, if not the first and most striking characteristic of the worst forms of scurvy. It comes out with the breath, and does not result from, though it may be aggravated by, a sloughy state of the gums. Scorbutic patients are generally found lying on their backs, with heads rather depressed, the position in which the weakened heart can best do its work. Frequently the bedclothes are seen to be elevated by the raised contracted knees. On looking into the mouth the gums are found, in a large proportion of cases, to be more or less involved, from a slightly projecting, spongy state, affecting the free margins, to an extensively hypertrophied mass, completely projecting over and between the teeth, extremely tender to the touch, and inclined to bleed. The color of the gums, which varies from a deep red to a livid blue or black, abruptly terminates with them, and forms a striking contrast to the pale, anæmic appearance of the lips, tongue, and inside of the cheeks. At times there is ulceration and even sloughing of the gums, and consequent loosening of the teeth. I have found the tongue to present usually a clean and very smooth surface."

In an article on cretins and the successful results of the educational efforts in their behalf by Dr. Guggenbuhl and others, the *Lancet* refers to an anatomical peculiarity in the highly arched palate of the idiot, which, it says, Dr. G. calls attention to "as indicating atrophy or atresia of the base of the brain, no less than depression of the vault shows imperfect development of the upper convolutions."

The Paris correspondent of the *Lancet* writes, that "the theory lately propounded before the Academy of Sciences by M. Demeaux, to the effect that epilepsy in the child often depends upon intoxication on the part of the male parent at the moment of conception, is gaining ground, and other observers are about to furnish their quota of experience on this particular question, the elucidation of which may, let us hope, at no distant day contribute to the diminution of this abominable vice."

To overcome chloroform asphyxia the *Amer. Med. Times* says, "Mr. Fowler, of Southampton, recommends vigorously slapping with the flat hand the naked surface of the body and limbs, and flapping the face and front of the chest with the corner of a wet towel, which induces a deep inspiration."

A far better and more direct method is to oxygenate the blood and stimulate the nervous system by means of the nitrous oxide or laughing gas.

In some clinical remarks on the treatment of fissure of the palate, in the last-named journal, PROF. MARKOE states that, notwithstanding "traumatic fissures of the palate may be operated upon with perfect success, yet, even then, the paralysis of the palatal muscles is so persistent that in a case of six weeks' standing, in an individual thirteen years of age, it was six months after the operation before the power of articulation was perfectly restored."

In the records of the Boston Society for Medical Improvement, published in the *Boston Med. and Surg. Journal*, the following account is given of a case of "sore mouth from filling a tooth with zinc paste: DR. COALE was called to a young lady suffering great pain in her face. Her lips, particularly the lower one, were very much swollen, and presented some erosions on the inner surface. There was some increase in the flow of saliva. With these, there was constitutional disturbance, shown by headache and fever. Mild saline aperients were prescribed, but the local symptoms became worse. Upon getting further at the history of the case, it was found that she had had two teeth filled, a week before, and the filling consisted of some new patented article that was inserted in the form of a paste, and then hardened. This filling was removed, and the symptoms, up to that time getting worse, immediately amended, and a day or two restored her to health. Upon examination, it was found that the filling was composed of oxy-chloride of zinc, made at the instant, by mixing the liquid and highly caustic muriate of zinc with the oxide of zinc. These make a paste which soon hardens or sets. Dr. C. found several other cases where the same effects had been produced in the same way. In one instance the soreness lasted more than a week, the patient being entirely ignorant of the cause. The substance has been largely circulated among dentists, with strong recommendations to use it; but it appears to be highly objectionable, and in some cases might produce very deplorable results, were such symptoms as were witnessed in this case protracted or developed to a greater degree."

In his summary of foreign medical literature for the *Amer. Med. Monthly*, DR. L. ELSBERG gives the following resumé of a paper on the "Congenital and Acquired Diseases of the Lips in Infants," by Dr. J. B. Jacobi, of Berlin:—

"Besides the well known *hare-lip*, there may be—

"1. *Too short upper lip.* The author here only confirms the well-known observations of Louis.

"2. *Mucous Tumors.* This occurs on the inner surface of the *under* lip especially. Mucous tumors are either (*a*) hypertrophy of the mucous follicles; (*b*) thickening of the mucous membrane, and the connective tissue under it; or (*c*) polypoid excrescences. Under ordinary circumstances, the author would not extirpate them until after the second dentition.

"3. *Hypertrophy of the lips.* This is not very rare, and is usually of a scrofulous nature. Purging and anti-scrofulous treatment is indicated, and if unsuccessful, operation after Paillard with chloroform.

"4. *Occlusion.* Although Boyer speaks of congenital atresia of the mouth, there is no such case recorded in modern literature. The author never found this imperforate condition except as a pathological process, after burns, etc."

In the report of the proceedings of one of the meetings of the Philadelphia Academy of Natural Sciences it is mentioned that "Dr. Leidy directed attention to three broken fossil teeth, which had been sent to him for examination by Dr. Shumard. They were from Washington County, Texas, and indicated a miocene formation like that of Nebraska, which has proved to be so rich in remains of extinct mammalia. Two of the specimens belonged to a species of Hippotherium; the other appeared to indicate a new equine genus, different from any of those obtained by Dr. Hayden on the Niobrara River."

The *Chemical News* says, that at a recent meeting of the London Chemical Society, a paper was read on a hitherto unobserved source of paraffin, in which the author, Prof. Bolley, observed "that paraffin has hitherto been considered a product of the action of heat on certain vegetable and mineral substances. In some experiments made in the Technical Laboratory of the Swiss Polytechnic School, on the varieties of coal used for the production of illuminating gas, Boghead shale was treated with various reagents for the purpose of extracting some of its proximate constituents. With ether it yielded an extract containing a substance which the author considers to be paraffin. He thinks it probable that paraffin exists, as such, in several of the materials from the distillation products of which it has hitherto been prepared, such as peat, shale, lignite, etc., and that the process described affords a convenient method of testing such substances for its presence."

In reply to a correspondent respecting a method of depositing silver upon brass, the editor of the same periodical recommends the following: "Mix prepared chalk and chloride of silver together, and then rub the brass or copper with the mixture, moistened with a little water. By this means the article will be cleaned and silvered at the same time. Such a thin coat of silver will be sure to tarnish soon. It must be kept from the air as much as possible."

The following method of treating india-rubber or gutta-percha, patented by Rudolph F. H. Havemann, of New Brunswick, N. J., is given in the *Sci. Amer.*: "The gum is dissolved in one of the well-known solvents, such as the bisulphuret of carbon, benzole, or chloroform, and a stream of gaseous chlorine is passed into the solution. The solvent is now removed by evaporation at a low temperature, when the new product appears on the bottom of the vessel in a plate of greater or less thickness, which, after drying, becomes perfectly hard and white like ivory."

According to the same journal: "The alloy of all the United States silver coins consists of nine parts of silver to one of base metal. The weight of the three-cent piece is 11 52-100 grains."

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Cassell's Illustrated Family Bible. Cassell's Illustrated History of England. Text by Wm. Howitt. These works are published by Cassell, Petter & Galpin, 37 Park Row, New York. Like the corresponding popular Natural History from the same house, they are issued in good style and in parts, profusely illustrated. They are printed on the 1st and 15th of the month, and supplied at the low price of 15 cents each.

THE

DENTAL COSMOS.

NEW SERIES.

Vol. II. PHILADELPHIA, FEBRUARY, 1861. No. 7.

ORIGINAL COMMUNICATIONS.

PRACTICAL HINTS.

BY J. D. WHITE.

Pivoting teeth seems to be an operation that there is very little attention paid to now, partly, perhaps, because other methods have become much improved, and that to spend the requisite time to set one tooth well seems to be making slow progress, compared to the wholesale process of setting teeth on plates. While we do not intend to advocate the practice of setting pivot teeth in rows, there are cases where one or two, or even four are needed, and if they are done well it makes a very useful and pretty operation. The operation, as a general thing, is in bad repute; but we are quite sure that this results from the careless and imperfect manner in which the operation has been performed. To set a pivot tooth well requires time and a great deal of work, and when it is done properly, it is not true that it is all the time coming out and is offensive. There is a great difference of opinion about the best method of securing the tooth to the root, or, in other words, the best method of pivoting. We will first proceed to describe a plain case, where all things are favorable except the nerve being dead. When a patient presents himself with a defective front tooth which is beyond the reach of preservation by plugging, the question arises, what shall be done? We decide to reduce the crown even with the gum, and set a pivot tooth. The patient objects, and remarks, I do not wish that; a friend of mine had one set, and he was laid up a week with the most awful swelling of the face I ever saw, and then the tooth was all the time coming out, and was so offensive that he had at last to get the root extracted, and a tooth set on a gold plate. We answer, that is doubtless very true; but it was improperly and hastily done. We propose to file this root partly off to-day, perhaps we will not file at it more than one minute, clean out the root, and introduce a little cotton and creosote, and see you in two days; if no irritation ensues, we will file a short time again, as much as we think the case will bear, renew the creosote, and meet you in two days again, as the case may be, and insure that there shall be no swelling of the face. Now if we find that there has been the slightest irritation produced by the filing, we let the case be until it entirely subsides before we proceed any further. It is doing too much at one time which causes the swelling in those cases, and not taking cold, as the dentist is in the habit of telling his patient. We have said we file off the root; this is done by using a safe-sided separating file, starting in at one side of the tooth, directing our cut in a line toward the middle of the base of the crown. We fill this cut with white wax, and send the patient away. When we meet him the second time, we file from the opposite side, directing our file to meet the cut from the other side at the base of the crown. This process leaves but little to dress down with the *rat-tail* or *stump file;* besides, this method of filing causes less jar to the root than to reduce it with the stump file or cutting forceps. We never, under any circumstances, "snap" a root, as it is called, even the smallest portion. We reduce the fragments of the crown with the edge of a separating file. We find it produces less irritation, only shaping the root to correspond with the shape of the gum with a half-round or stump file. When the crown of the tooth is reduced, and we do not regard it as safe to drill the root sufficiently to place on a tooth permanently, we set a tooth as a *sham,* until such time as we think it is safe to drill it and fit the permanent tooth. It is not good practice to make the final pivot until we are sure that no irritation will ensue. Now when a root is filed down to the gum, it is best to use for the last part of the operation a dull file, because it will cut the root and push down the free margin of the gum, so that when the filing is completed the root will be reduced a little below the gum; while a sharp or new file will cut the gum away as far as the root is filed. We are sure that if the same precaution be taken in preparing a root for a pivot tooth, that is usually observed by those who believe in destroying nerves and filling roots, the one will be as successful as the other. Now when a tooth is filed below the gum, it is not yet prepared to receive the crown of the tooth. In filing across the base of a root we leave a serrated edge, which will cause more or less irritation of the free margin of the gum when it falls over the tooth. This must be dressed down smoothly with a sharp scraper. In drilling the root for the pivot we first use a small five-sided broach, but we finish the operation with a burr-head drill, and wheel it round frequently at the bottom of the cavity, in order to make it a very little larger than the orifice.

(To be continued.)

P. S.—Since writing the preceding, our attention has been called to an excellent article in the department of Dental Literature and Art of the Dental Cosmos, on Pivot Teeth, by James Taylor, Cincinnati. We are glad to see that we have been anticipated in our remarks. When we commenced our article, it was to defend the operation, as well as to tell *how* it ought to be performed, as far as our experience had taught, and we are thankful for the help which has been afforded us.

CASE FROM MY NOTE-BOOK.

BY H. N. WADSWORTH, D D.S.

Early in the month of December, 1859, Mrs. S. applied to me for professional advice regarding the second left inferior molar. My patient was a fine, intelligent lady, of about thirty-three years of age, and nervo-bilious temperament.

Upon examination I found the pulp so badly exposed as to require destruction, which was done carefully and gradually; and at the termination of the month it had been thoroughly removed and the tooth filled. At this time I made an examination of all of her teeth; but matters of more moment appearing to absorb her time, the winter passed without any further visit from her.

In July of the present year she again called, and desired me to examine the second right inferior bicuspid; and after thoroughly doing so, I came to the conclusion that the pulp was nearly, but not perfectly exposed, and that a careful removal of all the superficial decomposed bone and as careful an introduction of a temporary stopping for the protection of the remainder over the pulp, would probably result in an eventual deposit and hardening of what remained, sufficient to enable me at some future day to refill with gold; for nature, true to herself, only wants a little assistance, and in every, or *nearly* every case, she will reproduce, or if she does not reproduce, she will throw out a mantle or shield over the delicately-organized, sensitive, and shrinking pulp, that will be an effectual and perfect guard against the irritating, conducting power of metals, or the firm, consolidating power of the human arm in condensing them. Since the able and exceedingly interesting article, written some years ago by that great and good man, now no more, and who was among the first to direct attention to the subject of filling teeth temporarily, to give nature an opportunity to restore herself, (instead of destroying,) unless the pulp was absolutely exposed beyond a shadow of a doubt, and suppurating, since that article was written by Professor Chapin A Harris, it has been a constant study in my practice to profit by, to prove, and improve upon it, until it would be easy to count the cases by hundreds that would otherwise have been treated for "exposed pulps" and all the attendant evils.

The uncertainty, however, that must always attend the diagnosis of cases of this kind makes it *imperative* that your patient apply *immediately*, provided any inflammation or pain follows the insertion of a temporary stopping, because it is well known suppuration, if not immediately relieved, is certainly followed by alveolar abscess; hence, on the next day, having experienced "terrible pain from the tooth," she came down for its removal; but I had gone to New York. She then called upon another member of the prefession, but not finding him in his office, she went home, intending to go down again in the afternoon; but during the afternoon the pain subsided, and finally ceased entirely.

That night she was "attacked by violent neuralgic pains," running to her temple, eye, and ear, the whole upper side of her face becoming the seat of the most intense pain. "*The tooth was quite easy!*" Here was work for the doctor, not the D.D.S., but the M.D., (according to the opinion of her friends,) who being called, applied the usual remedies for neuralgia, of which morphia predominated, and the patient lay in a state of unconsciousness for a week. She then left or was taken to Philadelphia, and placed in the hands of one of the most accomplished surgeons and physicians known in the city. He immediately, or within two or three days, ordered her under a shower bath, "to be daily repeated!" Under this powerful stimulant her nervous system gradually recovered its tone, and she was enabled to travel to Detroit.

All this time, remember, no question had arisen regarding her mouth, and the state *that* might be in. On arriving in Detroit, and feeling anxious to inquire if anything was neeessary to be done to the *tooth*, (but not suspecting for a moment that all her dreadful illness had proceeded *from that and that alone*,) she applied to a skillful dentist, (and an old friend of my own,) who told her this filling should be removed, as he thought the pulp was irritated and inflamed, which proved to be the case. The duration, however, of the patient's stay in Detroit was so short, as to prevent his operating upon the tooth in a proper manner, and he recommended her leaving the cavity open until her return to Washington. On her return here she found my office closed, from the distressing calamity (which the members of the National Dental Convention will remember followed closely upon their adjournment) of the loss of a beloved companion; consequently I did not see her until the twenty-fifth of September, when she called and related her experience and troubles, and requested my professional advice once more.

The tooth proved to have lost some portion of its pulp from suppuration, but was extremely tender and highly sensitive. I applied creosote and a light bit of cotton over it, sufficient to keep foreign bodies from contact, but not to prevent its absorbing the pus secreted by the suppurating pulp; told her to immediately remove the cotton on any painful symptoms. Considerable pain ensued, which subsided on removing the cotton. I applied creosote three times, which, reducing the inflammation sufficiently, I followed by nerve paste, but *exceedingly weak*, being fearful, with her high nervous organization and her recent terrible ordeal of irritation, of raising another excitement. In applying it I placed a very minute quantity of creosote containing that proportion of caustic (arsenic) which it would simply hold in solution immediately upon the pulp, laid a cap of lead over, and over this a small bit of tissue paper moistened in saliva, which forms a pulpy, soft, adhesive, and excellent covering. I gave directions to apply to me at once, in the event of any pain of great severity or duration. In the afternoon she called and told me she felt all the premonitory symptoms of her previous attack: pain in her temples, face, etc. I removed the application, washed the cavity with a syringe containing warm water and cologne, and applied creosote. I dismissed her with injunctions to call upon *me only*, if she had any neuralgic trouble or any other trouble with her head. The pain gradually ceased, and on the next call, which was in two or three days, I again applied the caustic for destruction of the nerve, and continued gradually and almost imperceptibly to kill, and to soothe, until I had the satisfaction to reach the apex, remove the entire pulp, and pronounce the operation a thoroughly healthy one. I filled the root with a worm of cotton, the point armed with creosote, filled the crown with gutta-percha, and told her to return in a week. During the destruction of this pulp her confidence in me was firm, her mind decidedly made up, but her fears of a return of her attack very great, and not without reason, as in two or three instances the symptoms were such as to cause me to withdraw the caustic and soothe the nerve, when they would subside.

On the expiration of the week she called. I found no irritation had followed the "*test*," no symptoms of periostitis whatever; everything indicating a thoroughly healthy condition of the tooth and surrounding parts. I filled its pulp cavity and then its crown. It is now, December fifteenth, perfectly healthy, and no single symptom of trouble in her mouth or head has been experienced since. She also informs me of a gain of ten pounds to her weight, which she attributes to good health, freedom from pain, and particularly to her continued shower baths. The above case bears directly upon the long and interesting article of Dr. McQuillen on the fifth pair of nerves, and is a case in point illustrating how necessary it is to carefully examine the teeth ere treating neuralgic symptoms. An accomplished member of *our* profession would have relieved my patient *in five minutes* of all her "neuralgia," without any information from her of what had been previously done to her mouth! *Under a mistaken diagnosis*, she suffered nearly a month most terribly, was unconscious over a week, and under heavy expense through the whole.

WASHINGTON, D. C., January 15, 1861.

TREATMENT OF EXPOSED NERVES.

BY J. RICHARDSON.

My efforts to preserve alive the nerves of teeth exposed by caries have not, heretofore, been rewarded with very encouraging success. I have used caps of metal and other substances; have employed successively tannin, creosote, nitrate of silver, chloride of zinc, nitric acid, etc., and have essayed to arch over the exposed point in filling; yet, with the best and most careful management of such cases, in the use of the various means recommended, I have practically failed.

More recently I have adopted a method of treatment, in the cases under consideration, which has been followed with such uniform and unexpected success in my own practice that I am induced to communicate it to others who may wish to test it.

Exposure of the nerve pulp occurs ordinarily as the result either of complete disintegration and softening of the superimposed dentine, or by the incautious use of cutting instruments in excavating.

If the exposure is recent, and there is entire absence of any indications of disease of the nerve, no treatment preparatory to the means I shall hereafter recommend for its preservation will be required. If, however, the patient has experienced some pain in the tooth, either of a continuous or intermitting character, for a short time previous to the visit, and this has not been either of sufficient duration or intensity to affect the structural integrity of the nerve, I endeavor to relieve any existing engorgement of the vessels by direct depletion. To effect this, I make a single, straight, and somewhat superficial incision across the exposed portion of the pulp with a sharp, keen-edged excavator, with the point formed after the manner of an ordinary gum lancet. From such an incision the hæmorrhage will be free, and the wound inflicted will heal quickly by first intention; whereas, if a blunt or ill-formed instrument is thrust carelessly and deeply into the delicate and highly organized tissues, the bruising and laceration of the parts incident to such unskillful manipulation will not only retard and limit the flow of blood, but, by provoking suppurative inflammation, induce ultimate and complete death of the nerve.

After the incision, bleeding should be encouraged by immediate and frequent injections of moderately warm water, and these may be continued for some time after the hæmorrhage has ceased—the application of warmth proving both soothing and antiphlogistic.

After the preliminary treatment indicated above in all those cases requiring it, I next thoroughly prepare the cavity as I desire for permanent filling, in order that the nerve may not be unnecessarily disturbed at a subsequent period. I next proceed to fill with some of the preparations of artificial dentine now in use, my experiments, so far, having been conducted exclusively with Roberts's "Os-Artificial." How far my success may be attributable to the particular preparation used, I am unable to say. The cavity is thoroughly filled with this material, bringing it in immediate contact with the exposed portion of the nerve, care being taken to have it sufficiently soft and plastic to prevent any degree of pressure that would tend to induce irritation and inflammation of the pulp.

The contact of the preparation with, and chemical action upon, the sensitive tissues beneath, produce in a greater or less degree a painful impression, lasting usually from five to fifteen or twenty minutes; in some cases a sense of uneasiness continues from two to three or more hours; in not more than one or two instances, in my own experience, has it continued beyond half a day, and then not with any degree of severity. In no case have I been compelled to remove the temporary filling on account of any permanent or increasing disturbance accruing from the operation.

Ordinarily, I permit the temporary filling to remain for from ten days to two or three weeks, as the case may be. If at the end of this time no unfavorable consequences have followed, and the tooth presents satisfactory evidences of unimpaired vitality, I infer that the "dead point of danger" is passed, and proceed at once to fill permanently.

If the cavity is of medium depth, I remove, with cutting instruments, all of the temporary stopping except a thin layer covering the entire floor of the cavity, to serve as a protective, non-conducting medium. If the cavity is somewhat superficial, I remove all of the first filling except that immediately over and around the orifice of exposure, allowing this portion to remain as a cap or shield to the nerve. The composition adheres to the walls of the carious excavation with sufficient tenacity to enable the operator to carve away neatly, leaving a well-defined, firm, adherent cap at the point specified, while its coaptation to the surface of the pulp and borders of the orifice is perfect.

In filling large crown cavities in the molar teeth, where decomposition of the larger portion of the dentine has occurred, and there remains a layer of animal substance immediately over the pulp expansion, I am careful not to disturb the former, and when removing the temporary filling leave a portion remaining at the bottom of the cavity equal in thickness to one-third or one-half the depth of the latter. In the cases just cited, so far as any protective agency of dentine is concerned, there is virtual exposure of the pulp, and subject to nearly the same risks of failure by the ordinary method of filling, as though open exposure existed. The advantages in retaining so large a portion of the temporary filling in these cases is, that while it forms a non-conducting basement filling most intimately adapted to the form of the cavity, it is at the same time sufficiently hard and resistant to permit the application of sufficient force in consolidating a foil filling without producing the slightest pressure upon the pulp. This, to some extent, must occur when the permanent filling is introduced and consolidated immediately upon the pliant and compressible animal deposit lining the floor of the cavity. When such pressure does occur, though in the smallest degree, I regard it as almost certainly fatal to the integrity of the nerve, and especially is this the case where a predisposition to inflammation exists from previous continued partial exposure of the pulp to the irritating agents usually present in the mouth.

Having prepared the cavity in either of the ways mentioned, I proceed to fill with gold, in doing which, in accordance with my usual mode, I first introduce blocks or cylinders one-half or two-thirds as long as the cavity is deep, forming my basement filling; the surface of this is then well consolidated, and the plug finished in the ordinary manner by adding small portions at a time, and consolidating with serrated instruments.

GENERAL REMARKS ON FILLING TEETH.

BY G. F. J. COLLUM, D.D.S.

It would be well to see that the mouth is in a healthy condition before commencing the operation of filling, or, at any rate, that the gum surrounding the teeth to be worked upon should be free from irritation, which is generally caused by the presence of tartar, otherwise the blood that would flow from the least touch of the instruments might seriously interfere with properly performing the operation.

The cavity can be opened by the use of the file, wedge, or chisel, so that it can be readily reached in order to be properly cleansed and shaped to permanently hold the filling. In doing this, the thin, brittle edge of bone surrounding the cavity should be dressed down to make the walls of sufficient thickness to support and protect the filling when inserted. Many in the profession neglect this important point, which accounts for so many teeth being lost, the filling proving worthless by the breaking away of the edges of the cavity in mastication or otherwise, and allowing the filling to become loose and decay to progress by the secretions working in between it and the walls of the cavity.

In separating, it is better in most cases to leave a shoulder near the neck of the teeth sufficient to prevent the lateral surfaces from again coming in contact, thereby preventing the retention of food, and allowing the surfaces of the filling to be readily cleaned.

Wherever it is practicable a V-shaped opening is to be preferred, as it is better suited for developing the cavity, and its peculiar shape preventing the lodgment of food. There are many prejudiced against opening the cavity by filing, but if properly done, and care taken to polish the surface of the exposed bone when the filling comes to be completed, no serious results can arise from the practice. Whenever the operation is very disagreeable to the patient, a sharp chisel will be found to answer the purpose with none of that grating occasioned by the file; the use of either of these instruments we prefer to wedging the teeth apart, as it can be done at once, and there will be no danger of peridental inflammation ensuing. After the cavity has been properly opened, it should be thoroughly prepared by removing the decay, and giving it a shape best adapted to retain the filling. A cavity that will admit of being made of the same diameter in the interior as the orifice can be more perfectly packed than one larger in the inside, from the fact that the pressure of the filling will be equal on all of its sides, whereas in the latter case pressure cannot be brought so direct, and the material will be less liable to be perfectly consolidated. There can be no rule of practice that will apply in all cases, hence the operator must rely upon his ingenuity so to shape the cavity as to suit the exigencies of the case. The next step is to prepare and insert the material with which it is to be filled. I would here remark that although what has been said relative to opening and preparing a cavity for filling will apply equally well to gold, tin, or amalgam, the remarks to follow refer only to the use of gold as the material considered to be the best adapted to effectually preserve the teeth, when the operation is properly performed. It is immaterial in what form or shape gold may be used, the result is the main object to be considered, viz., a solid and permanent filling. Some prefer rolling the gold into a rope and gathering it into folds; some make it into little balls or pledgets; others fold it upon itself so as to present a flat surface; and still others make it into cylinders, or use it in a sponge form. All these methods have their merits; still no direction for using these several forms will be applicable to every case. No one should ride as a hobby his particular method of operation or using the material. The desired result to be produced, as I have before stated, is to make a filling that will effectually preserve the tooth, and this can be effected in no other way so well as that in which the operator should use the material in the form that best suits his convenience, relying upon his practice and judgment to perfect the operation in his own way.

Dr. Maynard, of Washington, one of the best operators in the country, writing on the subject of filling teeth, says that "a person may be shown how to plug a tooth as one may be shown how to paint a picture; but one has never been told how to do either." Any one acquainted with the manipulation necessary to produce a picture, will readily see the force of his remarks; as in filling a tooth a certain result is to be produced, no matter by what particular mode of practice, so there can be no certain infallible rules for the artist to follow from which he must not depart; he may labor hours to produce certain effects by following rules that by aim-ing at the result, regardless of them, he might arrive at in a few moments. A case in point: it is said of the celebrated English landscape painter, Turner, a man whose skill in painting has never been excelled, that on one occasion, wishing to produce the effect of the sun breaking through the clouds, after repeated unsuccessful attempts, (probably according to rules,) he became impatient, and, gathering some color upon his brush, and stepping across the room, threw the brush, and the color striking the clouds, produced the exact effect for which he had so long been laboring.

The same remarks are applicable to the use of instruments. Let that form be used by the operator that will in his hands most readily produce the desired result; it is immaterial whether it is Ballard's, Forbe's, Harris's, or in fact any other pattern. We have often packed a filling with a common excavator that could not have been better done with all the peculiar form of instruments in market. One's risible faculties cannot but be affected in reading of the different modes of manipulation, and of the variously-formed instruments employed by different dentists. One, at the North, publishes his peculiar mode of operation; another, at the South, that which he fully believes to be the only true method, directly the reverse of his Northern brother; while from the East and West there are those who assert that unless a tooth is filled by their peculiar process, and with their improved instruments, the work would be good for nothing. One condenses the gold with a pair of tweezers of a certain form; another still adheres to the old-fashioned blunt-pointed fillers; another employs the serrated points; and still another uses the mallet in his operations. Now it is evident that each of these operators are striving to produce a result in their own peculiar way; a way they find most convenient for them to practice, and which produces the best effect in their hands. How preposterous, then, to lay down as infallible methods of practice for every one to follow! As we before remarked, every one should use his own good sense, coupled with the ingenuity he may possess, and, by-the-by, without a natural artistic taste and ingenuity combined, no one can hope to excel as an operator. A knowledge of all the theories to be found in the books cannot supply the deficiency. This is one reason why so few in our profession ever attain to the distinction of finished operators. It is a lamentable fact, but nevertheless true, that in many cases the operation of filling has been performed so superficially that, instead of saving the tooth, it has but hastened its destruction. The dentist in such cases has either been chary of his labor, or through his ignorance and want of skill has done that he should have never attempted; hence his operation will not endure, as every operation should when performed in the mouth for its health and preservation.

The exceptions to these remarks are those in the profession who never allow work to leave their hands until it is perfectly finished; such ones are bright and shining lights, clearly showing that they have at heart the honor and integrity of the profession of their choice. The welfare of their patients is considered, and the chink of the dollar is but secondary to the gratification of knowing that their perfect work will be the means of preserving that which, if lost, no money could restore.

After the gold has been properly packed and consolidated, comes the finishing; and those who think this of secondary importance do not take Nature for their guide. What beautiful finish a tooth has from her hands! Mark not only the general contour, but the high gloss of the enameled covering. What a beautifully-finished surface she has bestowed upon the teeth, not merely for looks, but for the important and express purpose of preventing any accumulation or retention of substances upon their surfaces, that by decomposition might injure her handiwork! Fillings, when placed in the teeth to restore, as far as practicable, the substance removed by decay, should be subjected to a course of treatment that will produce as nearly as possible the same finish. Gold is susceptible of a very high polish, if the proper pains are taken and the material employed to produce it. A cavity may be ever so well prepared, and a filling ever so firmly inserted, still, if the operator is satisfied, considering the work as completed by merely going over the surface of the filling with the burnisher, he has not yet learned that the same filling is susceptible of being improved fifty, ay, one hundred, per cent., by spending a quarter, half, or even an hour longer upon it. Using several grades, from one moderately coarse to the finest draw-file, then stoning with Scotch or other fine-grained stones, and by the free use of rotten-stone, chalk, and other polishing earths, applied with tape, buckskin, or soft wood, and ending with the burnisher, a finish will thus be produced that would almost put to blush the mirrored surface of silvered glass. Time and labor and suitable material can only produce it, but when it is, in the language of the poet, it is "a joy forever" not only to the painstaking operator, but to the dentist under whose eyes the work shall come. It has been my fortune, during a long course of practice, to see many such finished pieces of work by the noted of our profession, such as Parmly, Maynard, Harris, Townsend, Lord, Dwinelle, Allport, and others; and never has such work came under my notice, although years have passed since it was done, but that I have experienced as much pleasure in examining it as probably warmed the heart of the honest, skillful, painstaking author of it. Such work cannot be expected to emanate from the fippery, foppery, kid-gloved dentist, like the one who, on hearing the remark that Mr. George Waite's (the eminent English dentist) hands were calloused by filling teeth, suggested that such marks were made by holding on to the straps of his master's carriage? No; the hands that performed such operations will not only be calloused, but oftentimes blistered; ornaments more precious than jewels, denoting as they do the faithful workman: the soft hand produces soft work.

NEWARK, N. J.

"IMPORTANCE OF PRESERVING THE LINING MEMBRANE."

BY J. L. SUESSEROTT, D.D.S.

Our attention has been directed to an article in the last number of the Dental Cosmos, under the above caption. Believing the doctrine therein set forth to be in direct antagonism to all true scientific teaching, capable of misleading some, and encouraging a disposition to carelessness on the part of others, we propose noticing, in a hasty manner, the character of the *membrane* that is considered of such great importance in a semi-necrosed tooth.

In the outset we admit, to the full extent, the value of the *periosteum* and the *endosteum* or *medullary membrane* in the preservation of the osseous tissues, and for their reproduction when partially destroyed; recognizing, however, a vast difference between the osseous system and the dental structures.

The *pulp* of a tooth is a soft cellulo-vascular organ which receives its supply of vessels and nerves through the small foramen at the apex of each root. The *membrane* is a vascular areolar web of *extreme tenuity*, which envelops the pulp and lines the inner surface of the pulp cavity. Having no other source of nourishment than through the pulp, the removal of that organ must, as a natural consequence, cause the death of the membrane. This tissue, provided with vessels, as we have already stated, by the pulp, is more strongly attached to that organ than it is to the dentine, and it only maintains a firm hold upon the latter if we attempt to remove the pulp immediately after its destruction. If, on the other hand, we allow it to remain undisturbed for several days, until a slight degree of softening has commenced, we find the pulp and membrane coming away, upon a slight effort, almost entire.

In regard to the practice of the author of the above-quoted article having been successful as far as the prevention of the result to which he refers, we do not entertain a doubt. Taking for granted that his manipulation was thorough, as far as the perfect filling of the fangs was concerned, we can readily understand how it was impossible for the debris of the retained membrane to pass out through the foramen at the apex of the root, and thereby be productive of periostitis or abscess; but we cannot free ourselves of the idea that, if in large quantity, by passing into the tubuli of the dentine it might cause a permanent discoloration. Viewing the source of nourishment to the membrane, as we have above noted, we would humbly ask how the retained membrane can assist the periosteum in sustaining the vitality of the tooth, and if so, by what method of delicate manipulation a filling is inserted without producing fatal compression on this tissue?

We have made use of the term "semi-necrosed" as applied to a tooth from which the pulp has been removed; lest a misunderstanding might occur, we deem an explanation of our acceptation of the term necessary. Necrosis is used to designate that condition of bone which resembles mortification, or sphacelus of the soft tissues. Entire necrosis or death does never occur to a tooth so long as one of its two sources of nourishment is preserved, *i.e.* through the pulp or periosteum; but the destruction of either of these singly must eventuate in the partial necrosis of the organ, as the destruction of both would cause entire necrosis.

Advocating as we do the thorough cleansing of every cavity, and the subsequent filling with pure gold to the extreme end of the fang, we cannot too strongly deprecate any practice that will encourage the retention of organized structures, which must decompose very soon after their only source of supply is cut off. It is not argued by any operator in respectable standing, that he always succeeds in removing the entire pulp and membrane, nor will we argue that abscess or periostitis must follow as a natural consequence if they are not entirely removed. The retained portion may never take on the fluid or gaseous form, but, becoming dry, may do no harm. We do, however, argue that, instead of it being at all important to preserve the lining membrane, the only safety is in its entire extirpation.

SPRINGING OF PLATES IN SOLDERING—CAUSES AND REMEDY.

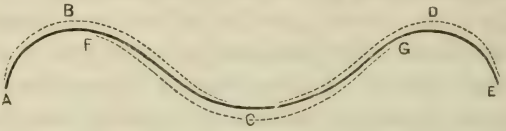
BY J. F. LEAMING.

THE subject of springing of plates during the process of soldering has been so often brought to the notice of the dental profession, so many causes assigned and remedies given, that it has become almost hackneyed. And yet it is evident that the difficulty is not fully overcome by any method hitherto advanced. More light is called for, and while I would not obtrude upon the notice of the profession any "methodus" peculiarly my own, the spirit of liberality which characterizes our art renders it a pleasure to contribute my mite of information, in return for the many valuable suggestions received through your columns.

Without attempting an enumeration of the various methods proposed to obviate this difficulty, it is enough to assert that they are based upon false principles, the object being, in nearly every instance, to *confine* the plate. How futile such attempts must prove, is obvious to every one familiar with the law of expansion of metals, a law at once universal and imperative, so imperative in fact, that in every art, our own excepted, it is universally acknowledged and *provided for*, not *overcome*. It will suffice, in illustration, to instance an acknowledgment of this imperative law on a large scale, in the construction of the stupendous bridge which spans the St. Lawrence, where the abutments of solid masonry, capable of resisting the immense masses of floating ice, were properly considered inadequate to overcome the diurnal expansion of the huge iron sleepers on which the structure rests, and the ends were accordingly left free. To be successful we must do likewise.

Why does a plate spring in soldering?

Case it up in the ordinary way, in equal parts of sand and plaster. It is now imbedded below, around the entire edge, and externally at the sides in a hard resisting mixture. Bring on the heat, and what changes of shape *must* it undergo? A glance at the diagram will show us at once.



The dark line represents the edge of a transverse section of a plate between the bicusps in its normal position. The points *a*, *c*, *e* being *fixed* by the hard casing, the plate when expanded by heat will assume the position indicated by the upper dotted line. While in this distorted shape the solder at *b* and *d* flows, sits firmly, and effectually prevents a return to the original position. This will sufficiently illustrate the *cause* of springing in every other part of the plate.

To remedy this difficulty a very simple expedient only is necessary. After the teeth are fully arranged, melt some *clean* beeswax in a spoon, and with a camel's-hair pencil coat the plate over the whole lower surface to a line opposite to the linings of the teeth, leaving the surface between *a f* and *g e* uncoated. Also coat the *whole edge* of the plate, allowing the wax to extend up, on the outside, a line or two, upon the gums of the teeth. It is now ready for casing in the ordinary way. It is evident that when the heat is brought on, the wax will melt and allow the plate to expand downward at *a c* and *e*, while the points *b* and *d* will remain stationary very nearly. On cooling, the plate will assume its first shape.

Above we have a solution of the *cause* of plate springing. The remedy suggested offers an easy method of overcoming the difficulty. Were the arch along which the teeth are fastened perfectly regular, the remedy would be perfect. The plate expands equally in all directions from its central point. The object is to apply the wax so as to allow it to expand freely in every direction excepting at those points which are to be fixed by the solder. A little reflection will show that in irregular plates certain other points must be covered with wax. The solder, if very abundant, may act *slightly* to contract the arch, and an imperfectly swaged plate will spring *per se*. Yet I offer the above with confidence, as touching the case philosophically, as a step in the right direction. I have used this method over a year, and have yet to see the first plate spring sufficiently to injure it. Others may improve upon the suggestion. If a casing material could be devised which would expand equally with the plate, no warping would be perceived.

A few remarks are necessary. Case up the work on a piece of fine clay slab, previously well wetted. Use as much *clean* sand in the plaster as it will set, it thus becomes less resistant. For the same reason always moisten a dry casing before bringing on heat. The wax used should be new and clean. Refuse wax contains impurities which may injure the plate. To prevent the plate from rising at *b* and *d* confine the *points* of the teeth with plaster and sand. I frequently coat the upper side of the plate with wax also, and cover with plaster, leaving sufficient room for the solder to flow. It is a good plan. If the linings of the teeth are sufficiently near each other to cause the solder to flow across, they should be filled in, either with the metal to make a continuous lining or with plaster to prevent the flow. Avoid by all means the flowing of the borax between the teeth. Besides being the most fruitful *cause of breaking* them, it has a tendency to contract the arch posteriorly. To prevent it fill in with plaster. A case thus constructed, with these precautions observed, will not crack if the heat be gradually brought on, as it always should be, rendering confining bands useless, and showing the entire absence of expansion from within outward.

Seaville, N. J.

METALLIC DIES.

BY L. P. HASKELL.

I noticed in the October number of the Dental Cosmos an article by Dr. T. L. Buckingham, on the "Contraction of Zinc."

I wish to suggest to Dr. Buckingham, and all other dentists who have never used the article, that in *Babbit metal* they will find what is not to be found in any other metal or combination of metals, *non-shrinkage;* at the same time it is as hard as zinc, melts at a low temperature, and consequently can be used in *oiled sand* without burning it.

I have used it ten years and have no fault to find with it in any respect; and other dentists whose attention has been called to it, after using, testify as above.

Although it can be purchased at any metal warehouse, such purchases are not reliable; better make it according to the following formula:—

Copper,	1 part;
Antimony,	2 parts;
Tin,	6 parts.

Melt in a black-lead crucible, in the order named. Should it be brittle, add a little more tin.

Never plunge these castings into cold water, as it will make them brittle; but when nearly cold, wash with clay.

For a counter die use lead, with perhaps one-sixth tin added, and do not turn it until it begins to thicken.

With this metal, as I have stated, you can use *oiled* sand, which has the advantage of being *always* ready for use. Once oiled, it will last for months. Use sweet oil, about one pint to the peck of sand. If it blubbers the first time using, add more sand, and when once in order it will continue so. Do not heat the Babbit metal more than sufficient to melt.

If Dr. Buckingham will follow the above directions for one month, he will never use zinc again, unless he thinks the shrinkage advisable.

TEMPORARY ARTIFICIAL DENTURES.

BY HUGH M. GRANT, SR.

I SEE it recommended in many of the late publications, to insert artificial dentures for temporary purposes, I mean immediately or in a few days after the extraction of natural teeth; but in no case have I seen anything different recommended from the ordinary mode of inserting permanent plates or sets. I know not how this kind of practice may have succeeded in the hands of some practitioners; I have found that plates fitted as well as they can be at first, would fit badly at the end of three or four months, and worse at the end of a year; the teeth becoming too short, and the plates very loose and uncomfortable, food getting under them, etc. For the last year or two I have done a great deal of that kind of practice, and to remedy the objections above mentioned and alluded to, I have adopted in my practice the plan of making my temporary dentures on very thin silver plates, and lining them with gutta-percha; and from my experience in this kind of work, I regard it as a considerable improvement. It does not only add to the comfort of the patient or wearer of the teeth, but it makes quite a handsome finish, giving something of the appearance of continuous gum-work, looks very well, in the mouth, and my patients tell me they wear quite comfortably. In the course of three or four months after I first insert them, I require my patients to return, and I take a new impression of the mouth and put a new lining on the plates, which gives a new and perfect fit again; and by making the second lining thicker it gives length to the teeth, and will wear comfortably and look neat and well as long as it is necessary to wear them, or till the mouth will be in order for a permanent plate. In some of this kind of work I have taken the impression of the mouth before I extracted the teeth, and cut the teeth off the plaster model and trimmed it as nearly as I could the way the mouth would be after the teeth were taken out, made the artificial dentures, had them ready, and put them in the mouth immediately after extracting the natural teeth, before leaving my office; for some of my lady patients were very sensitive on the subject of going without teeth; and they gave entire satisfaction. I think the gutta-percha is more congenial to the lacerated gums than the harsh metal without it, and is quite cheap and requires but a short time to line a plate, if properly managed.

As I have seen no account of any other dentist doing work of the kind, if you think it worth a notice in the DENTAL COSMOS, you are welcome to give it; and I will hereafter, if requested, give the whole *modus operandi* of my experience in it. Plates made in that way I have found stick up admirably on the lacerated gums, I think much better than plates without linings; and if a little warping or springing of the plates should occur in soldering on the teeth, it is easily remedied in putting on the lining. And now, in conclusion, I will say I have tried to present this subject so that you can understand it.

FINCASTLE, VA.

WE would be much pleased if Dr. Grant would favor us with the *modus operandi* of his method of procedure in doing his temporary work.

J. D. W.

HAEMORRHAGE OF THE GUMS.

BY V. VAN VLECK.

BELIEVING that some of the profession are not familiar with the best course to pursue in cases of severe hæmorrhage of the gums, I desire to communicate through your valuable journal the following information. A short time since a lady called to have her mouth prepared for a full set of teeth, and as she was exceedingly anxious to have her mouth cleared at one sitting, I continued the operation of extracting until I had finished taking out all her teeth, there being twenty-five in all; the only inconvenience following being a severe hæmorrhage of the gums, and to suppress it I tried all of the usual remedies with which I was acquainted, but to no effect. There being an eminent surgeon in the house at the time, he requested me to use persulphate of iron, which I did. On making an application it suppressed the bleeding at once. And I have since learned that it is invaluable with surgeons in all cases of severe hæmorrhage.

NEW YORK, 1861.

PROCEEDINGS OF DENTAL SOCIETIES.

PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

REPORTED BY GEO. T. BARKER, D D.S.

A MONTHLY meeting of the Association was held on the evening of January 8th, 1860, at eight o'clock.

President, Dr. Dillingham, in the Chair. Present, Drs. Suesserott, Van Osten, McQuillen, Fitch, Buckingham, Roberts, Barker, and a large number of students of the Pennsylvania College of Dental Surgery.

The subject of discussion being

"THE ABNORMAL CONDITIONS OF THE MOUTH DURING CHILDHOOD,"

was opened by Dr. Barker, who said that in considering the subject we must first trace the causes which produce these abnormal conditions, and this would bring us as dentists to the most fruitful one, viz.: interrupted or difficult dentition, which may be due to many different influences. In almost all cases of teething there is more or less constitutional or local disturbance, the saliva being increased, with hot, turgid and swollen gums over the advancing teeth, these symptoms, however, differing in different constitutions. In cases of interrupted dentition, it will be fortunate if these local difficulties are all that occur, but not unfrequently cerebral or intestinal derangements are present, that unless speedily removed will induce the death of the little sufferer.

He considered there was a lamentable ignorance prevalent with parents that dentition must necessarily produce constitutional disturbances, and as a consequence many were allowed to die when the simple lancing of the superimposed gum over an advancing tooth was all that was required in the early stage of the disease; indeed no excuse was more frequently heard from mothers for a sickly, fretful infant, than the one that it was only teething. He doubted not the returns of mortality presented in the reports of deaths of children under three years of age could be greatly lessened if parents could be taught the importance of early attention to the disturbances, the result of interrupted dentition. No better illustration could be offered than the one given by Mr. Tomes, who was on one occasion called to a child of the age of fourteen months, whom he found in a tub of water, quite insensible, and passing from a state of epilepsy into that of tetanus. The eyes were not influenced by the light, and the pupils remained dilated. He found, on examining the mouth, the anterior molar of the left side upper jaw was ready to come through, and therefore lanced the gum, and in two minutes afterward the child was on its knees in the water playing with the handle of the tub, in excellent spirits.

He believed in lancing it was advisable to use a rough, saw-edge gum lancet, as there would be less danger of hæmorrhage; besides, the roughened surfaces of the wound would not unite as quickly as if made with a sharp one; and remarked, with children of scrofulous diathesis who were teething, pustular eruptions were nearly always present.

He referred to the abnormal condition of the mouth, the result of caries or alveolar abscess of the temporary teeth, considering it the duty of every dentist to preserve the deciduous teeth by temporary fillings, that they may remain as long as necessary in the mouth, and also prevent the difficulties arising from exposed and inflamed pulps and alveolar abscess. In lancing for the evacuation of the pus in the latter disease, he adopted the method of separating the gum and tooth with the lance in the same manner as previous to extraction, instead of passing it alone through the gums. The opening will not be closed, as Dr. Hunter observed the gum would never again become permanent to the tooth, while in the other method, the wound would unite after the removal of the pressure of the pus, and subsequently the same difficulties would again occur.

Dr. Suesserott did not consider teething a predisposing cause of disease, as it is a physiological act; for if all of the functions are properly performed we need never expect any difficulty or derangement of the economy during the performance of this, one of the most beautiful operations of nature. If, on the other hand, we find some constitutional or local cause producing a derangement of the system and weakening any particular part of the mechanism, we find the normal afflux of blood to the dental structures heightened to an abnormal irritation, and thus the act of teething is made to be an indirect *developing* cause of disease. A *predisposition* to disease existing in any structure of the animal economy, the performance of any natural function may be converted into a *developing cause*. Even the essential and beautiful function of nutrition may develop disease in a part that is predisposed; yet no one is ready to admit that nutrition is a *predisposing* cause of disease.

Dr. McQuillen said, while recognizing dentition as a physiological condition, must we not admit in addition, that interruption of that function is a prolific cause of disease with children? Utero-gestation is a physiological condition, and yet by the derangements produced in the system under such circumstances, latent diseases are not unfrequently developed in the pregnant female. Carious teeth in particular, which have remained in the mouth for years, causing little or no annoyance to their possessor, frequently become exceedingly painful, taking on either odontitis or periodontitis.

Reference was then made to the difference between the *predisposing* and *exciting causes* of disease. The *first* or *predisposing* cause being a peculiar condition of an organ or part of the animal economy, rendering it liable to take on diseased action when exposed to the influence of the *second* or *exciting* cause. The exciting causes being those influences external or internal which are calculated to develop the predisposition to disease, viz.: exposure to atmospheric vicissitudes, imprudence in diet, difference in quality or quantity of food, etc. Interrupted dentition he was disposed to regard as an *exciting* rather than as a *predisposing* cause of disease. In illustration of this, attention was directed to the different results flowing from difficult dentition, according as the child was predisposed to cerebral, pulmonic, or intestinal disturbances. The bills of mortality afford the most conclusive evidence that the thorough consideration of this subject is too often neglected by the medical practitioner. Overlooking the fact that the diseases they are called upon to treat during the period of dentition may have been excited by the unsuccessful effort on the part of a tooth to make its way through a dense and unyielding gum, their attention is directed alone to correcting the constitutional disturbance, when perhaps all that is demanded is a free use of the lancet in the oral cavity. In support of this, reference was made to the views advanced in Neill and Smith's Compendium of Medicine, (a work that is found in the hands of every medical and dental student,) when treating of Spasm of the Glottis.*

Notwithstanding the fact that the authors distinctly state that this affection occurs especially during the period of teething, and that they could not but be aware that by reflex nervous action the irritation caused by that process is calculated to induce the difficulty under consideration, not one word is said with regard to the propriety of examining the mouth or lancing the gums.

The following advice, which he had frequently heard fall from the lips of Dr. J. K. Mitchell, could not be too often repeated, or too indelibly impressed upon the minds of medical and dental practitioners, viz.: that when called upon to attend a child during the period of dentition, whether suffering under a cerebral, thoracic, or abdominal difficulty, to bear in remembrance that the first indication is to examine the mouth, and if the gum should be found in an inflamed and swollen condition to lance at once, making a single incision over the incisors and canines, and crucial incisions over the molars. This may not be sufficient to arrest the progress of disease, but it should be the first step in the treatment.

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* These authors state that "Spasmodic croup, as it is sometimes improperly called, consists in a sudden choking fit, caused by spasm of the glottis. There is no fever, nor any morbid appearances about the throat, the disorder is purely functional. It occurs in children during the *period* of *teething* or *weaning*. The child suddenly loses its breath, tosses up its arms, turns bluish about the mouth, and when it recovers its breath makes a long crowing inspiration. This complaint is often fatal. During the fit the best remedy is to sprinkle a *little cold water on the face*; in the intervals the bowels must be opened, the diet rendered light and digestible, and the child put in the best possible state of general health. Very small doses of prussic acid with an alkali are sometimes of service."

He had no experience to offer in the treatment of cancerum oris, but would direct attention to an agent (the chlorate of potash) which is regarded by many practitioners as a specific in that disease. The quantity prescribed in the twenty-four hours varying according to the age of the child, from twenty to sixty grains in divided doses, given every four hours.

Dr. Fitch referred to the abnormal conditions of the mucous surfaces of the oral cavity, considering many of them to be due to constitutional causes, they would, therefore, require constitutional treatment, and believed it to be the legitimate province of the dental practitioner to properly treat such cases, and that he should possess the necessary requirements to fit him for such duties. He spoke of abnormal conditions which were due to vitiated habits and faulty nutrition, such for instance as cancerum oris, which was only met with in the children of the most uncleanly and depraved classes. The treatment called for was first to supply proper food, to change the vitiated condition of the blood, also commanding strict cleanliness to be observed. As a local application he believed zinci sulphas was generally recommended. He had met with cases where there seemed to be hereditary tendencies to diseases of the mucous surfaces, but they were usually present in children of strumous habit, who were badly fed, and did not get sufficient pure air and exercise. In lancing gums for children, preferred the crucial to the straight incision, considering it far more effectual in accomplishing the object desired.

Dr. Suesserott considered lancing of the gums a very necessary operation under many circumstances. Very little bleeding usually follows this operation, generally just enough to relieve the engorged vessels. In a patient possessing the hæmorrhagic diathesis, or in any case where there is inordinate engorgement of the vessels of the gum, the lancet that is used should not be dull, but roughened on the edge, so as to lacerate the part, and thus favor an arrest of the hæmorrhage. He did not fear that the cicatrix formed, in case the tooth was not immediately extruded, would be a barrier or would increase the difficulty, as is asserted by many, being fully persuaded that the new or "inodular tissue," as it was termed by Professor M'Cartney, is much more easily destroyed than the old or pre-existing one.

Dr. McQuillen directed attention to the influence of the season of the year upon children during the period of dentition; thus difficult dentition during the winter is very likely to excite pulmonic derangements, while in the summer, intestinal disturbances are most likely to supervene. With regard to the importance of making crucial incisions over the molars, he stated that a single incision, either backward or forward, or from side to side, was not sufficient to remove the pressure of the gum upon the protruding tooth, but that it required the incisions to be made in both directions; and in illustration of this, remarked that if a piece of kid should be stretched over a square body it would be difficult to force it through an aperture in the kid made by merely cutting from one side to the other; but if an additional cut at right angles to the first should be made, (constituting the crucial incision,) all pressure being removed, the body would readily pass through the aperture.

In conclusion, he alluded to the practice children sometimes indulged in of chewing matches, and had reason to believe that such a course was calculated to develop phosphor necrosis in their jaws. He recalled an interesting specimen that had been shown to him by his friend Dr. Calais, in which necrosis and exfoliation of a large portion of the alveolar process of the lower jaw, including several of the deciduous teeth and the half-formed permanent teeth below, was attributed to the fact that the child had been frequently seen with matches in its mouth.

A lengthy discussion upon what was the legitimate province of the dental practitioner was entered into by Drs. Buckingham, Fitch, McQuillen, Barker, and Suesserott.

The following was chosen as the subject for next discussion:—

"THE SYSTEMIC CAUSES INTERFERING WITH THE DEVELOPMENT OF THE PERMANENT TEETH."

EDITORIAL.

PREMATURE EXTRACTION OF DEFECTIVE TEETH.

THERE is, perhaps, as much necessity for a dentist to exercise forethought or to calculate ahead as a member of any other profession. If he acts only from what he sees, he is not at all times doing his duty. The teeth of patients, as well as their general health, undergo so much change from time to time, that it defies one's judgment to tell in advance what will be the final result in either case; hence it should always be borne in mind by the dentist, that to express an opinion to a patient as to the condition of his teeth by the time he is twenty or thirty years old, is doing him no good, but sometimes doing himself great harm; because, if a patient has any confidence in the opinion of a dentist, he will hold him responsible for it, and if it fail he will be condemned. We all know very well that bad teeth of early life are sometimes very good teeth in middle life, comparatively, because the rapid process of decay stops without much plugging or care, while others which were better to appearance have become, spite of care, pretty bad teeth at the same period of life. We constantly hear the remark made by patients, "Doctor so-and-so told me, when I was young, that by the time I was thirty I would not have a tooth in my head; but I think my teeth pretty fair for one of my age." This is a reason why a dentist should not extract a tooth for a patient, unless it is from the greatest necessity. It requires, perhaps, a good deal of experience to know what constitutes a necessity for extracting a tooth. That it is not well formed, or is the cause of slight inconvenience to a patient, or that the mouth seems crowded, especially in young patients, is not sufficient cause under all circumstances to extract a tooth. We see mouths every day which have been damaged in this way; besides, we see cases constantly that prove to us that bad advice has been given to patients by those who we regarded, when we were young in practice, as better advisers. We saw a case in point a few days since. Ten years since last July, when we were confined to our room with a broken limb, a lady called to consult us about her face, which was badly swollen on both sides. She was about thirty-five years of age; her back teeth had been much disposed to decay all her life; they had been plugged over and over again by a dentist who stood high in the profession, and in whom she had the most implicit confidence, but at this time he recommended the extraction of seven of her molar teeth; this shook her faith in him, and she made up her mind to see another dentist. We were selected for advice; but being confined to our room we objected; but she insisted on seeing us, and in the extremity of her need we met her on *crutches*. We found several of the teeth very badly diseased at the roots. We removed the plugs, put tents of cotton in the gums after lancing freely; the teeth in a short time became firm, and as healthy as such teeth ever are; they were all plugged. These operations were performed while we sat on one chair and the patient on another. She has never had any further trouble, and the teeth, in all probability, may last ten years longer. We know that this dentist advocates the doctrine, that the mouth must be rid of all teeth which do not present a healthy appearance. How many mouths have been ruined by the same hands we know not; but we know many. If we followed the practice of extracting every tooth when it was in a bad condition, without resorting to palliative treatment, where would the mischief end? This is but one case of a vast number of the same kind. There is one point in the treatment of teeth which we have not yet seen noticed; and that is, when the teeth come through the gum defective, the enamel seems to be imperfect as well as a portion of the dentine—generally the first molars of the second set. Too many dentists are in the habit of extracting those teeth for young patients at first sight. Now this is not right or just to the patient, at least in many cases. We wait for time; and it not unfrequently happens that when those teeth become fully erupted, that the soft portion of the tooth wears off and the balance of the tooth serves the patient for many years. Such cases we examine frequently, and sometimes we aid nature in getting rid of the defective portions by filing or scraping, until the softening process ceases. In some cases where decay has reached the pulp, we let it alone, if it does not cause pain; and if it does, we palliate it by the use of tannin and morphia, until the tooth becomes old enough to bear the treatment of the nerve. We might give a case here to illustrate. A young lad called to see us about seven years since, suffering some inconvenience with exposed nerves in the two superior first molars; their enamels were defective as described above, and the nerves exposed on the posterior parts of the teeth; the teeth were very large, not a great deal of the crown worn away; the process had stopped. Six months since he called to get the rest of his teeth examined; we found those teeth in the same condition that they were seven years before. We told him he was now old enough to get the nerves of those teeth destroyed, and plugged. This was done; and the teeth are in good condition and serviceable to the patient. J. D. W.

TINCTURE OF IODINE IN CHRONIC PERIODONTITIS.

One of the most valuable and reliable agents that can be used, in the treatment of chronic periodontitis accompanied by a constant discharge of pus, (which either escapes through a fistulous opening in the gum opposite the apex of the root, or works its way between the alveolus and roots and wells up from under the gum,) is the tincture of iodine. Useful as the remedy is, it is only, however, within the past four years that the attention of the profession was first directed to it by Dr. Garretson. Prior to that time creosote, aqueous solution of arg. nitras, trephining the alveolus and removing the sac, etc., were the favorite modes of treatment. With no disposition to decry any one of these, (for they have proved successful in very many cases, in the hands of others and in our own, with the exception of trephining, which we have never tried,) we still should like to hear of the more general employment of the tincture of iodine than at present prevails. One of the objections to its use has been the apparent difficulty of injecting the sac in any other way than through the foramen at the apex of the tooth, and this, no doubt, has deterred a great many practitioners from using it, under the apprehension that by injecting it into the pulp cavity a permanent discoloration of the teeth would be induced. Although this fear is not altogether groundless, yet it has not so much force as seems apparent from first impressions, for though its presence in the pulp cavity does produce discoloration, by the employment of liq. ammonia that can be readily neutralized.

The necessity of injecting the sac through the pulp cavity can be obviated, however, by the employment of a syringe similar to one for which we are indebted to the kindness of Dr. J. Foster Flagg. In this the barrel and piston of the syringe are of hard rubber, and the nozzle, which is of gold, is quite long, delicate, flexible, and has a capillary bore. The small size of the nozzle admits of its being readily passed into a fistulous orifice, and thus the iodine can be brought in contact with the superficies of the abscess, and exert its stimulating and alterative influences. In addition to injecting the abscess, a decided advantage will be gained by painting the gum, over the diseased tooth, with iodine. We have not deemed it necessary to enter into a detailed description of the course to be pursued, in the treatment of alveolar abscess, of the absolute necessity of removing all foreign substances from the pulp cavity, etc., as our object has been mainly to direct attention to the efficiency of the agent that heads this communication. J. H. M'Q.

REVIEW OF DENTAL LITERATURE AND ART.

BY J. H. M'QUILLEN, D.D.S.

THE BIRMINGHAM AND MIDLAND COUNTIES DISPENSARY FOR DISEASES OF THE TEETH.

THROUGH the politeness of Mr. S. A. Parker, dentist to the above establishment, which is located in Birmingham, England, we are enabled to present the following interesting extracts from the annual report:—

"STATISTICAL REPORT BY DENTAL OFFICER.—It has become a general practice of late years to establish hospitals and dispensaries for special diseases in various parts of the kingdom; and in Birmingham charities for the relief of deafness, diseases of the eye, and spinal deformities exist; but it was not until the beginning of last year that I thought a dispensary for the relief of diseases of the teeth would be a great boon to the poor of this large and increasing population.

"Two questions naturally arise upon the establishment of a special institution: firstly, is such an institution required? and secondly, what are the benefits to be derived therefrom?

"If we turn to the report of the number of patients who have attended during the time it has been opened, and also to the number of operations that have been performed, I think both these questions may be satisfactorily answered.

"I need scarcely point out how important it is that the teeth should receive at least some care and attention; and the means that the well-to-do have at their disposal to obtain relief from the hands of skillful dentists not being available for the poor, who, from their ignorance of the important part that the dental organs play in the preservation of health, allow them to decay and be removed as if of no consequence. Such fatal and false notions will be clearly apparent by an examination of the statistical tables at the end of this report.

"It would be useless for me to enumerate the variety of diseases which accompany an abnormal state of the teeth; sufficient to say that neuralgia, violent pains in the ear and head, indigestion, and dyspepsia are the most prominent; and that until the dental organs are restored to health, little or no relief can be expected for the evils occasioned by them. I should not touch upon this subject, but seeing so many cases daily presenting themselves to me, I cannot but think how truly important it is that I should make such statistics public.

"These tables have been carefully made from a book kept at the dispensary for the purpose of recording each case; and I have endeavored, as far as possible, to follow out the same course as that adopted. by Mr. Tomes at the Middlesex Hospital, who was the first to make public statistics, although upon a more elaborate scale than those of mine.

"The report points out the astounding fact that of 1952 operations performed, no less a number than 1494 were done under the age of twenty years; and that out of the same number of operations performed, 1217 were upon the most valuable teeth in the head, viz., the molars or masticating organs, at ages varying from under five up to eighty years.

"Your attention is also directed to the table relative to the liability of the teeth of children to decay under fifteen years of age. This table refers to the first teeth only, and it is a most important period of life as regards the future state of the dental organs. It is well known how intimately connected the second teeth are with the first, and that operations performed upon the first teeth at an improper period, and in an unskillful manner, may result in irreparable mischief to the second set. This has been forcibly impressed upon me by numerous cases that have come under my observation at the dispensary. Too much care and attention cannot, under any circumstances, be bestowed upon the teeth of children.

"The foregoing remarks have been made with the direct intention of impressing upon you the importance of an institution like the one now advocated being established upon a broad basis. It is supported entirely by voluntary contributions, and it is open to all objects of charity without recommendation. The funds, as I have before stated, are inadequate to carry out all the objects for which the institution was founded; and I trust, ere another year passes by, I may say that the patients still increase, the funds are much larger, and the institution is in a fair way to prosperity.

"TABLE I.—Showing the liability of the different classes of teeth to decay at given ages.

AGES.	TEETH.							
	Central Incisors.	Lateral Incisors.	Canines.	First Bicuspids.	Second Bicuspids.	First Molars.	Second Molars.	Third Molars.
Under 8 years of age..........	14	15	0	0	0	13	0	0
From 8 " to 10...........	30	38	2	3	5	179	17	0
" 10 " " 15..	45	26	13	42	59	228	67	5
" 15 " " 20...........	26	31	19	40	49	159	83	17
" 20 " " 25...........	3	13	8	21	36	56	30	22
" 25 " " 30...........	4	3	0	10	10	42	29	5
" 30 " " 35...........	4	4	0	4	4	21	14	4
" 35 " " 40...........	4	4	5	4	7	11	15	5
" 40 " " 45........ ..	1	5	1	1	1	8	6	2
" 45 " " 50...........	2	2	0	3	0	5	1	1
" 50 " " 55...........	0	0	0	1	0	1	3	0
" 55 " " 60...........	1	0	1	0	0	0	0	1
" 60 " " 65...........	0	0	1	1	1	1	0	1
" 65 and upwards.........	0	1	1	0	0	1	0	1
Total.......................	134	142	51	130	172	725	265	64

"TABLE II.—Showing the liability of the teeth of children to decay at given ages, and the different classes.

AGES.	TEETH.				
	Central Incisors.	Lateral Incisors.	Canines.	First Molars.	Second Molars.
Under 5 years of age...........	33	28	8	40	41
From 5 years to 10.............	2	4	20	25	44
" 10 " " 15.............	3	0	7	6	2
" 15 and upwards...........	0	0	1	2	3
Total......................	38	32	36	73	90

"This table relates to the temporary teeth only.

"From observations made by Mr. Tomes, F.R.S., at the Middlesex Hospital.*

"TABLE III.—Of 3000 permanent teeth extracted from various causes at the Middlesex hospital,

72	were	central incisors;
117	"	lateral incisors;
78	"	canines;
273	"	first bicuspids;
434	"	second bicuspids;
1124	were	first molars;
637	"	second molars;
265	"	third molars.
3000		

"TABLE IV.—Showing the relative percentage of any one kind of tooth extracted between the specified ages.

KINDS OF TEETH.	AGES.							
	Under 15.	Between 15 and 20.	Between 20 and 25.	Between 25 and 30.	Between 30 and 40.	Between 40 and 50.	Between 50 and 60.	Upwards of 60.
Of the central incisors.........	15¼	8¼	5½	8¼	12½	26½	16¾	7
" lateral incisors..........	16¼	14½	9½	6¾	12	19¾	11	10¼
" canines....................	16¾	15½	5	5	15½	25½	6½	10¼
" first bicuspids...........	14	23¾	21¼	10¼	15	8¾	2½	4½
" second bicuspids.......	10¾	25¼	20	12	15	8	5	4
" first molars................	33¼	27	16	8½	7¾	4½	2	1
" second molars...........	7	24	20½	14¾	14½	8¼	8	3
" third molars.............	½	6½	19¼	23½	26	15¾	5¾	2¾

"These tables I have taken from a work published by Mr. Tomes, F.R.S., in 1848; and I am not aware of any other such tables having appeared since.

"It will be perceived, upon comparing the tables I have made with those of Mr. Tomes, that the relative percentage of the different classes of teeth to decay continues the same, although eleven years have passed between the two tables.

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* Tomes on "Dental Physiology and Surgery," p. 142.

"It was for this object that I quoted so able an author as Mr. Tomes.

"SAMUEL ADAMS PARKER."

By comparing the preceding tables, it will be found in each that by far the vast majority of teeth treated were anterior molars. Thus, of 1683 teeth treated by Mr. Parker, 725 were first molars; and of 3000 teeth extracted from various causes, by Mr. Tomes, 1124 were first molars.

About five or six years ago we took occasion, in an article published in the *Dental News Letter*, under the caption of the "Anterior Permanent Molars," to direct the attention of the profession to the immense number of these teeth that are sacrificed. As the article in question may not have come under the observation of many readers of the DENTAL COSMOS, we take the liberty of presenting the following extract, as it is practical in character and bears directly upon the subject under consideration:—

"Developed as the anterior molars are, at the age of greatest susceptibility to the diseases incident to childhood, it is reasonable to infer that the function of nutrition must be so modified in its action during the prevalence of those afflictions as to prevent the perfect formation of these teeth. If, however, during their ossification the system is perfectly healthy, they will undoubtedly be better prepared to resist the destructive influences of external agents.

"Defective structure may, therefore, be fairly regarded as the predisposing cause. Marked evidences of this condition are not wanting, for it is not an unusual circumstance to find them decayed when but half erupted.

"The entire absence of attention to the proper cleansing of the teeth, characteristic of this period of life, must be regarded as a fruitful cause of the rapid progress of decay. Added to this is the almost universal ignorance, on the part of parents, of the fact that these teeth belong to the permanent set. Indeed it is frequently a very difficult matter to convince them of the true relations of these organs. Thus incipient decay—which arrested in time by the operator would have preserved the teeth—progresses so far and so rapidly, that it is not uncommon for the pulps to be exposed as early as the seventh or eighth year of age. This early denudation of the pulp is attributable to the large size of the pulp cavity, and the very thin lamina of dentine through which the decay has to progress during the second or third year after the eruption of the teeth.

"A prominent cause that increases the number of these teeth sacrificed is a want of faith, on the part of many dental practitioners, as to the expediency of attempting to save them when radically decayed, particularly when the nerves are exposed earlier than the tenth or eleventh year; and thus efforts which would be promptly exerted in behalf of other teeth are not extended toward them for that very reason. In consequence of this impression, certain dental writers have advocated the extraction of the anterior molars instead of the bicuspids in the treatment of an irregular denture. This practice cannot but be regarded as an injudicious one, except when teeth are so badly decayed and broken up as to render all efforts directed toward their preservation futile. The reasons for entertaining this view are various. In the removal of the molars there is double the masticating surface lost that there is in the extraction of the bicuspids; added to this, the unfavorable position the second molars almost invariably assume after the operation prevents a proper occlusion with the teeth of the opposite jaw, and in approximating the bicuspids, as the intervening alveolus is absorbed, their approximal surfaces do not present parallel to each other, but are so situated as to leave a cone-shaped space between them—the base of the cone being formed by the gum. This favors the retention of decomposing agents, and the ultimate decay of the teeth. Lastly, the early removal of these teeth facilitates the premature and imperfect development of the wisdom teeth, so characteristic of the present generation.

"The course to be pursued in decreasing the number of anterior molars sacrificed, is to impress upon the minds of parents the necessity of training their children to an unsparing use of the tooth-brush as soon as they are capable of managing it; and of the importance of subjecting their teeth to an examination on the part of the dentist at an earlier period than is usual, even with those most particular on this point.

"With the assistance of finely-pointed probes, defects in the enamel, so minute as to escape the most thorough visual examination, can be easily demonstrated, and incipient decay arrested. Though the orifice may be so small as to barely admit the most delicate probe, it should receive immediate attention, even when the teeth are but half erupted; for, besides the possibility of its being but the capillary opening to a large cavity, we have seen that there is reason to apprehend an early exposure of the nerve. And this can only be prevented by prompt measures.

"In introducing a filling under such circumstances, care must be observed not to exert a very great amount of force; for, as the fangs are but partially developed, there is danger of inducing considerable irritation at their extremities, and possibly a destruction of the vitality of the pulp. A filling thus introduced should be regarded as a temporary operation, to be replaced by a more complete one at the expiration of a few years, when the tooth is perfectly formed."

DENTAL REVIEW OF LONDON—SEPTEMBER.

MAXILLA AND TEETH OF THE TROGLODYTES GORILLA (*Concluded.*)—"We thus terminate our review of the bones which form the maxillary apparatus in Man and the Anthropoid Apes; and we now ask attention to the form and peculiarities of the teeth. It is almost needless to say that in the Catarhine or Old World Quadrumana the dental formulæ both of the permanent and the milk series are the same as in Man. But in the Anthropoid Apes, in common with inferior members of the group, the purposes for which the teeth are designed differ from those which they fulfill in Man. In him, their primary use is the division and mastication of his varying aliment; and, secondly, they subserve the faculty of speech. The unbroken series and equal length of the teeth, the thin crowns of the moderately-developed incisors, the smooth equality of their posterior surfaces, their vertical or nearly vertical implantation,—are all provisions in which may be recognized a design in unison with the capacious and complicate brain, the exquisitely-organized larynx, and the flexible and highly-endowed tongue. In human organization, all is rendered subservient to the expression and embodiment of thought. In the Great Ape, the dental apparatus is constituted on a different plan, and answers a widely-differing purpose. Endowed with no power to conceive or perfect instruments by which he may repel attack, or assert superiority over the denizens of his native forest, Nature has furnished his jaws with organs of other mould than those which add enchantment to human smiles, and give distinctness to the accents of human eloquence. His teeth are destined not only for the comminution of his coarse vegetable food, not only for overcoming the resistance of the tough rind or harder shell which incloses the sapid fruit, but as deadly weapons they may claim equality with the fangs of the highest Carnivores. The great cuspidate canines of the Gorilla, implanted deep in the ponderous shafts of the jaw, and worked by the enormous masses of muscle which spring from the crested cranium and huge zygomatic bars, constitute an armature corresponding with the untamable ferocity and brute courage, before which even the boldest elephant-hunter quails. Professor Owen was informed by the commander of a British trader, 'that he had seen a Negro at the Gaboon frightfully mutilated by the bite of the Gorilla, from which he had recovered. Another Negro exhibited to the same voyager a gun-barrel, bent, and partly flattened, by the bite of a wounded Gorilla in its death-struggle.'

"Another, and, if possible, more important point of differentiation, is the sexual inequality in the development of the canines which is observed in all the Anthropoid Simiæ. The size of these teeth in the males, both of *Troglodytes* and *Pithecus*, far exceeds their dimensions in the weaker sex. The huge laniaries of the Gorilla or Orang are to be ranked as sexual developments in the same category with the antlers of the Stag and the tusks of the Boar, and, like them, they indicate a provision by which the function of continuing the species devolves on the males of greatest bodily strength and prowess. It appears to us that the absence of all sexual distinction in the teeth of Man, points as decidedly to an impassable barrier between his organization and that of the brute Ape, as does the symmetry of his limbs, his plantigrade foot, or his perfect hand. Moreover, let it be remembered (as is remarked by the great anatomist on whose researches these papers are founded,) that to no external circumstance can the superiority in development of the canines in the male be ascribed. While the young of the two sexes are still nourished by their mother's milk, long ere the development of the sexual system is perfected, the crown of the great male cuspidatus is being calcified and made ready to displace its small deciduous predecessor. It is, therefore, a preordained structure, a weapon forged while yet the forces which are to wield it are undeveloped, and long before the instincts to which it is to be subservient have asserted their sway.

"The upholders of the doctrine of the distinct creation of species have been charged by some of their opponents with allowing their judgments to be shackled by the fetters of a traditionary faith; by others, with giving an undue scope to the exercise of the imaginative faculty—with permitting it to assume an unwarrantable influence in a discussion which should be conducted in exact accordance with the laws, and be scrupulously restricted within the limits of rigorous induction. We submit that no small demand is made both on faith and imagination, when the naturalist is required to believe that an assemblage of organs analogous to the armory of the Gorilla, with its formidable garniture and the massive apparatus by which its weapons are wielded, has been transformed into the human mouth—has become endowed with its extraordinary adaptability to the expression of mental conditions; insomuch that even the configuration and mode of implantation of the teeth have been rendered subservient to the faculty of speech; that these *acquired* peculiarities have become so established in Man, that anatomical science can trace the design long before the power of articulation has been developed in the individual:

moreover, that this marvelous transmutation has taken place either under the influence of external and accidental circumstances, or from the operation of a law of natural selection of which no evidence can be obtained during the historic period, and to which the records of the rocks afford no confirmation.

"We confess that, to our minds, the time-honored belief, that each beast of the field was created *after his kind*, and that Man has a right to boast a higher and nobler descent, involves no such drafts on credulity, and demands no such flight of imagination."

DENTAL REGISTER OF THE WEST—DECEMBER.

"TREATING AND CAPPING EXPOSED NERVES. By DR. W. A. PEASE.—Dr. Watt has taken the initiative in bringing before the readers of the profession, a subject that excited a lively interest and discussion at Saratoga, viz., the propriety of treating and capping the exposed nerves of teeth. As a whole, I am pleased with his article, and, though it is apparent he has a kind feeling for the nerves, and evidently wishes them a long life and no aches, and, indeed, is willing to give them a helping hand, and by trusting them, give them a chance for their lives, it is obvious he does so with some mental misgiving and many fears. As this subject will command the attention of the profession for some time to come, it will be proper for observers to put on record the results of their experiments and experience, and such other observations as may be pertinent, or will tend to throw light upon the subject.

"All admit that the nerve (using a comprehensive term) is capable of depositing dentine, or toothbone. From childhood up to a certain age, the nerve recedes from the crown, or cutting edge of the tooth, and deposits dentine as it goes, till it arrives at a certain point, which is generally half way between the cutting edge of the tooth and the gum, where it generally remains stationary during life, unless, from some irritating cause, it is again aroused to action, again to deposit dentine, or calcific matter. The deposition of dentine seems to be solely due to the periosteum, or the membrane lining the nerve canal; but, at times, there is another and inferior material deposited, without much reference to use, and for no intelligible purpose. This inferior material, or calcific matter, is deposited capriciously and at random, often near the foramen, or scattered along, at different points, in the body of the nerve, in what may be called nodules, or points of diffusion. Where the circumstances are favorable, these nodules increase, the deposit following along the course of the fibre or vessel on which the nodule is situated, till, finally, the fibres are all calcified, when they are united together, forming one calcified mass. Then the periosteum may become ossified and unite the calcified nerve to the tooth. It is needless to say that these deposits are exceedingly rare, and when they do occur, they must probably be referred to those morbid, or diathetic conditions of the system, in which we find valvular, or muscular ossification. Certain it is that this calcification is of no practical value to the dentist; but he possibly may yet derive some benefit from the deposition of dentine by the periosteum. The one seems to be systemic, or diathetic, but little due to caries or dental irritation, and may be also going on in the arteries or tissues outside of the teeth; the other is chiefly due to local and dental irritation, and is the nearest approximation we meet in the teeth of that osseous repair which we know follows injury of the bones in other parts of the system. Reasoning from analogy, from the known laws that govern the repair of injury of the long bones, we may expect too much, and perform operations that will end disastrously, when a more intimate knowledge of dental pathology would save us from mortification. It is well known that the periosteum is a secretory organ; it forms the bones, and, to a certain extent, repairs their injuries; it unites most fractures, or resections; but there is no authentic case where the fangs of a tooth, after fracture, have been united. So necessary is it to the health of bone, that a part denuded of it is liable to necrosis; and the most that can be said of it is, as a dental organ, that in some constitutions and under certain circumstances, it deposits dentine to prevent its exposure by the gradual loss of the substance of the tooth, from external attrition or caries; and, in some few instances, it is reported to have closed an opening, made by a dentist, in preparing a cavity, and to have deposited a septum of bone between itself and a plug. Thus, so far as we know, its reparatory capabilities are exceedingly limited, and seem to be exceptional rather than constant; and, it is probable, they will never be of much benefit to man, except in those cases where, from direct antagonism, the teeth are gradually worn away during a series of years. In such cases, there is generally a secondary deposit of dentine of undoubted value.

"Here the question arises, can the dentist call into exercise, at will, the secretory properties of the periosteum, known to be active during the gradual wearing away of the teeth; for it is known that some stimulus is necessary, as the nerve rarely makes any effort to protect itself from the ravages of caries, and the few cases where this effort is made simulate the gradual wasting of the teeth from mastication. If we go to analogy for an answer, we find the requisites to unite a fracture are apposition and rest; of resection, the preservation of the periosteum; and recent experiments have shown that the periosteum, transplanted to other structures, as the comb of a cock, still performs its legitimate function, and deposits ossific matter. When there is an indolence of the secretory function, and a failure to unite a fracture, or rather, when the callus has been broken, or the granulation interrupted, the surgeon, after cutting down to the bone, removes a portion of the ends, or drills holes into them, and places therein pegs of ivory or bone, to re-excite an inflammation, after which, the fracture generally unites. Here the ivory pegs perform the same office that the grain of sand does in the shell of the oyster; and it is possible that some foreign substance, placed against the internal periosteum of a tooth, under favorable circumstances, may excite it to action. This is the more probable, inasmuch as some stimulus is known to be required, as caries seldom excites it to deposit osteo-dentine. Those who have split many carious teeth will not require to be told that periosteal depositions are exceedingly rare; and that class of dentists who destroy the nerve and remove it from the tooth, will bear witness to the infrequency of periosteal deposits. For myself, I can say I have removed the nerve from its canal almost daily for many years, and as it comes from the canal and hangs dangling from the point of the instrument, I have examined it, called the attention of my patient to it, (for it was satisfactory to him to know that the nerve was not only dead, but actually removed from the tooth,) and together we have examined it, held it up between us and the light, and remarked how it represented the exact form of the nerve canal. We have placed it on paper, and there reexamined and handled it, before it was taken away by the patient as a curiosity; and I must confess I have never met with a single case of calcification, or ossific deposit by the nerve, attributable to caries. Cases there may have been, where, at some point beneath the cavity, the nerve has made a feeble effort to protect itself. If so, they have escaped my observation; and I think I should have noticed them, as in excavating a cavity, when I approach that point where anatomy says the nerve should be, I have almost held my breath, lest an incautious cut should expose it; and if, from accident or necessity, that point was reached, I have invariably found the nerve, or the fetid chamber where it died. From this, I am persuaded, as well as from all the information I can derive from others, if I except some few cases to be mentioned in another place, that the efforts of the nerve to protect itself from caries are so slight and so rare, in comparison to the numberless cases met with every year where no effort has been made, that they scarcely arise to the dignity of an exception.

"The question then arises, if caries is removed by thorough excavation, the nerve is exposed and healthy, have we any known means to stimulate that nerve to take care of itself, by depositing a septum of bone between itself and the plug? Is the plug of itself a sufficient stimulant, as is the grain of sand in the shell of the oyster; or must we resort to other means? If so, what? Medication? What are the agents, or is rest sufficient? Hitherto it has been supposed that the nerve was simply exposed, but not wounded. If wounded, would that complicate the case? If so, how much? What would be the prognosis; or would that depend upon the nature of the wound, whether it was a point, or a line, a simple slit, leaving the edges of the periosteum in apposition, or whether there was an actual loss of substance? If there is merely a slit, will it heal kindly by first intention; and will that be just enough inflammation to insure the necessary deposit? Or, if there is a loss of substance, will that place heal and be restored? If so, how? By granulation? Then there must be secretion, effusion. Where is that secretion to go, after the tooth is thoroughly plugged; and what is to become of it, if it finds lodgment? Will it putrefy, or be absorbed? Here a delicate question arises. How much irritation or inflammation can we set up in the nerve, incased as it is in a solid wall of bone, and not produce engorgement, or gangrene? And provided there should be too much phlogiston, have we any special antiphlogistics to reduce it?

"I have before remarked that I had seen cases where the nerve had deposited dentine of repair, to protect itself from caries. A few words will dispose of them, and show that they do not constitute an independent class, but really belong to that class in which the nerve deposits dentine of repair, to protect itself from the gradual wear of teeth in mastication. They were, so far as I recollect, cases where, at some time, caries had been active, but from some cause, generally from the removal of a tooth, where the cavity was on the approximal surface, the smaller cavity in the remaining tooth ceased to increase, and the decay lay dormant for several years. In plugging such teeth, I have often found secondary dentine, and in some of them also calcific deposits. Now, the long time in which caries has lain dormant in these teeth fulfills all the conditions that exist in the gradual wear of the teeth during mastication. It gives the nerve time to protect itself and shows that the only thing necessary, so far as we now know, to enable it to protect itself, by a secondary deposit of dentine, is time, or the gradual loss of substance of the tooth during several years. The past summer I was plugging some teeth for a gentleman of seventy years of age. While preparing the front approximal cavity of the second superior bicuspid tooth, I noticed he flinched. Supposing the nerve was dead, I had cut down boldly into the cavity to secure a good base, as the tooth was very badly decayed, and also to prepare the fang for filling. I examined it, and found a very healthy deposit of secondary dentine. Afterward, while preparing a cavity for him in an incisor tooth, I was very cautious in my explorations, till I found the nerve was dead.

"Without describing other cases, or discussing this question further at present, I will say, I have tried every plan my ingenuity could devise, or that has been suggested by others, and I do not know that I have plugged over a single exposed nerve that is now alive. Bear in mind, I do not say none of them are. Some of them have given no trouble; others, I know, are dead. Whether alive or dead, they only prove that the nerve, or teeth, will sometimes tolerate a great deal."

Dental Register of the West—December.

The following extract, taken from an introductory lecture, not only treats the subject-matter (oxygen) in an original manner, but also gives evidence of excellent powers of antithesis on the part of the writer. While attributing the most opposite results to the same causes, there is no apparent straining at effect of perversion of facts.

"Lord Oxygen. By George Watt. * * * But our hero element is powerful to destroy, as well as to build up. Few if any elements have hardened themselves against him, and have prospered. The strength of iron is as nothing with him, and weapons of steel he grinds to powder. Gold becomes as fine dust before him, and silver as the blackness of darkness. He calls for the aid of his servant, nitrogen, and the solid marble melts like snow. Helped by another servant, the flinty rock becomes grass and stubble before him. The leaves wither at his blighting touch, and nature is dissolved by his blasting energies. Let us think, for a moment, of the ruin he has wrought since creation's morn. The flowers, the trees, the birds, and the beasts of ancient days have all been swept away by the hand of this ruthless destroyer. He has swept over the earth, and nations have withered by the blast of his breath. Great Babylon is fallen—is fallen, and by his mighty hand. Where are the cities of the old world? He has burned them to ashes, or crumbled them to dust; and over their ruins he raises the shout of triumph, and rushes forward to new conquests. When the whole world had rebelled, he destroyed it by a flood—all its inhabitants, save one righteous family, which he carried in his bosom and wafted by the genial gales of his balmy breath to a place of safety. He has broken the ships of Tarshish with his east wind. He has overwhelmed fleets and navies in the mighty deep. Great is the ruin he has wrought, and still he is unsatiated. He forges the thunderbolts of war, and gives to them their destructive energy. He manufactures a cooling salt, which, in the hands of two of his servants, becomes a demon of destruction, hurling forth 'firebrands, arrows, and death,' and imitating the thunders of heaven. Nothing material escapes his destroying hand. He devours the widow's bread and wastes the fruits of the earth to create the demon alcohol, that the world may be filled with crime, and men may be changed to devils. He is the merciless executor of that sentence, 'Dust thou art and unto dust shalt thou return.'

"And then just think of his petty annoyances. While he blows the smith's fire he consumes his coals and wastes his iron. The surgeon rejoices in his shining blade, and the dentist delights in the lustre of his forceps; but he watches for their negligence and covers them with rust. He withers the leaves of the lady's arbor, and sours the milk in the dairymaid's pans. No annoyance is so petty that he will not stoop to it. He addles the egg of the patient bird, and moulds the food of the busy ant. He breathes into the pantry, and the bread becomes stale, the butter rancid, the meal musty, and the meat tainted. He rots the farmer's fruits, his farm houses and fences, and turns the housewife's jellies and jams to vinegar. In short, he is prying, petulant, and impertinent.

"Shall we reverence such an object as this? Shall we even respect it? Nay, shall we not ignore or despise the science that discovers it and reveals its attributes? But why should we not reverence it? Why not even worship it? While sages sacrifice to devils, and savages worship the storm-king, shall we fail to worship oxygen? What if it is the great destroyer of our race? Should we not try to propitiate that which will one day crumble us to dust?

"But let us turn from this, and think of his goodness. Why, he blesses us at every hour—gives us a new blessing with every breath. But how shall we specify his acts of kindness when we owe him our life, and are each moment dependent on him for its continuance! In the earliest moments of our helpless infancy he breathed into our nostrils the breath of life, and has breathed new life ever since. He allays our hunger and quenches our thirst, with food and drink adapted to our appetites and desires. He not only surrounds us with good things, but he is so jealous of our welfare that he rushes into and explores every avenue of our bodies, lest there may be something there to harm us. He ransacks our entire systems—veins, arteries, capillaries, and cavities—and comes out loaded with poison twenty times a minute. He makes every pore of the skin an outlet for the purification of our bodies. He kindles a fire to warm us when we are cold, and fans us with the cooling breeze when we are hot. He builds us houses like palaces to dwell in, for our comfort and protection."

DENTAL ENTERPRISE—JANUARY.

"A FEW WORDS CONCERNING THE TREATMENT OF IRREGULARITY — From the fact that all the appliances used for correcting irregularity of the teeth are inconvenient and annoying, the following are some of the conditions which should be observed in their construction. They should be as light and delicate as possible, without sacrificing strength; simply and so constructed as to be easily removed, from the necessity there is of frequently cleansing them and the teeth of all foreign substances collecting about them, also that they may be readily altered from time to time to suit the change of position of the irregular teeth, and so adapted to the teeth that they will not act as irritants to the gums, as is frequently the case with ligatures, if proper care is not taken to prevent their sliding up to and under the gum; also that they may not injure the surface of the enamel of the tooth around which they pass. Frequently ligatures alone will remedy the irregularity, without the necessity of mechanical apparatus.

"To prevent the ligature from sliding up under the gum, waxed floss silk can be passed two or three times around the crown of the tooth, between gum and ligatures, and then tied. These ligatures can be made of common waxed thread, or silk, or india-rubber; and from the constant strain excited by the rubber ligature, they are preferable to all others.

At times a simple band cut from india-rubber tubing, having attached to it silk or thread ligatures, will answer every purpose. A band of this kind can be used alone in the case of simple irregularities, or where it is necessary either to diminish or increase the space between two teeth. In the use of these bands care should be taken to prevent them from sliding under the gum, thereby causing inflammation and loss of the tooth.

"Bands of this kind are in common use to prevent the saliva from entering a cavity when it is about to be filled, and care should be taken to remove it when the operation is completed, as cases have occurred, where it has been allowed to remain, of its making its way nearly to the apex of the root, and causing the loss of the tooth. For correcting irregularity caused by the protrusion of the upper front teeth, the lower being in their normal position, no appliance answers a better purpose than the improved inclined plane of Catalan. It is simple in its construction, easily removed by the patient for the purpose of cleansing it, and during meals; and if properly made can be retained in the mouth without the aid of ligatures, and does not injure the teeth or gums. The force exerted by this appliance upon the irregular teeth is gradual and, at the same time, effectual, occasioning less soreness than the majority of appliances used for the same purpose. It is necessary that it should be well adapted to the lower teeth, and for this purpose a correct impression of them should be obtained, preparatory to making the die over which to swedge the cap.

"For taking these impressions gutta-percha will be found very serviceable. No harder metal than zinc is necessary for the die if proper care is taken in swedging, using first a lead and afterward a block tin counter die. There is in the majority of cases no need of the plate or cap extending further back in the mouth than to the second bicuspid on each side. Clasps to confine it in place are not necessary, if the cap is well adapted to the teeth.

"The inclined plane attached to the cap can be of different shapes, or two planes combined can be attached to the cap, so curved, that if necessary the tooth can be turned on its axis at the same time that it is brought forward to its regular position in the arch. This appliance can be constructed of hard rubber, which possesses some advantages over metal, in a case of this kind."

The advice contained in the above extracts, with regard to the care demanded in preventing india-rubber ligatures from slipping up under the gum, recalls to our mind a case in which a ring of india-rubber tubing was employed to retain the arsenical paste in a cavity upon the buccal side of a left lower wisdom tooth. Owing to the peculiar shape of the tooth the ring slipped down under the gum, and the next day when the patient returned to have the arsenical application removed, the ring not being visible, it was either forgotten altogether by the operator, or supposed to have slipped off from the tooth. The paste and pulp, however, were thoroughly removed, and the patient dismissed for a few days. On the following day the tooth became quite sore and occlusion of the jaws was attended with considerable pain. The inflammation and pain increased in violence by the next day, when the patient came under our notice. Regarding the case as one in which the periodontitis was due to the treatment and removal of the pulp, and not being acquainted with the fact that an india-rubber ring had been employed to retain the arsenical paste, we advised the application of leeches to the gum, and the administration of a mild cathartic to act upon the bowels, and dismissed the patient until the next day. Notwithstanding the fact that the directions were implicitly followed, when the patient returned, not only was there no abatement of the inflammation and pain, but the tooth in addition was forced so far out of its socket that it was quite loose, and could be moved about by the tongue. Under these circumstances, doubting the possibility of saving the tooth, it was extracted. The reader can better imagine than we can describe our surprise on discovering that the *causus belli* was a delicate india-rubber ring, which had worked its way down half the length of the conical-shaped root of the tooth.

DENTAL REGISTER OF THE WEST—JANUARY.

"'AMAUROSIS CAUSED BY A CARIOUS TOOTH.' (You might as well say, 'Amaurosis caused by *having* teeth.')—In the DENTAL COSMOS for November, 1860, may be found an extract with the above caption. And as it is *foreign* original matter, of course it must pass, whether it be sense or nonsense. The detail of the case clearly attributes the loss of vision, of thirteen months' standing, not to a 'carious tooth,' but to a 'splinter of wood,' and goes on very astutely to *suppose* it came there by a mechanical force sufficient to make it traverse the 'centre of the tooth,' (an upper molar.) Now I thank both the professor at Wilna and the professor at Philadelphia—each most heartily—*once*, and 'F. P.' as heartily *three times*, (the exact number of times his initials occur in the detail,) for the case, as it points a principle, and shows us that amaurosis can be produced by occult causes, which, when removed, allow it to cease in otherwise healthy subjects, which is very well for both novice and erudite dental surgeons to know. But as all cases are detailed for the purpose of instruction, let us not set down 'remote' (the carious tooth) for approximate (the splinter) causes, if we do not wish to befog and lead astray the needy simple ones we try to benefit. For, truth to say, but too few of us understand the significance of the accounts we are favored with from the medical journals, not only from the ambiguity of the articles themselves, but also for the want of a knowledge of the parts affected, as to normal or abnormal physiological and pathological states, sufficiently accurate to enable us to criticise intelligibly the mere say so of anything that comes to us from what we deemed a respectable source. It were better for us to stand still than to blunder in the dark, or better not be led at all, than to be inducted still farther into the darkness. 'Be *sure* you are right'—then advance. A."

In response to the above, we would take occasion to remark that the highest compliment which can be paid a writer is to quote him as authority, and that it is incumbent upon one who cites the remarks of another to render the statements of the writer *verbatim et literatim.* Governed by considerations such as these, we neither felt disposed nor authorized to alter language obtained from such a source as Lawrence, on the Eye, (as high authority on affections of that organ as oculists possess.) In directing attention to the case, however, we neither attributed the difficulty to the "carious tooth" nor the "splinter of wood," but to the true cause, periodontitis, as the following extract, which precedes the case cited, will prove:—

"The sympathetic irritation arising from odontitis or periodontitis, when extending beyond the dental organs to other parts of the fifth pair, may either be located in the face, simulating tic douloureux, or it may, as in the following case, mentioned by Lawrence, not only induce intense pain in the eye, but also bring on impaired vision or amaurosis."

With regard to the remark, "You might as well say, 'Amaurosis from *having* teeth,'" we would ask why may not even such a statement be correct? Physicians who have had much experience in the treatment of infantile affections will bear testimony to the fact that temporary amaurosis frequently accompanies and is dependent upon the sympathetic irritation induced by difficult dentition.

In illustration of this, we can cite a case which escaped our memory when preparing the article on the Fifth Pair of Nerves: Willie, aged two years, was attacked during the eruption of a tooth with a cerebral difficulty, accompanied by slight delirium. While in this condition he took no notice of anything, although the eyes were wide open; the pupils, however, were dilated to such an extent that the iris was hardly visible; and when the child was taken to the window by the attendant physician, Dr. Morehouse, the stimulus of light appeared to have no effect upon the eyes, as the pupils still remained dilated. By proper treatment, restoration to consciousness, vision, and health was effected. We will not pretend to say that this difficulty unquestionably had its origin in dental irritation, although we have reason to believe so. It certainly was coincident with it, however. As additional evidence in support of the position maintained, we would refer to the case cited from Tomes by Dr. Barker, at the recent meeting of the Pennsylvania Association of Dental Surgeons, reported in this number of the Dental Cosmos.

In conclusion, it is somewhat surprising, if the printer has not committed a typographical error, to find a writer who complains of "the ambiguity of the articles" found in medical journals making use of such an expression as "normal or abnormal physiological and pathological states." Quoting his own words, we would ask, is this "sense or nonsense?" Would not normal physiology and abnormal pathology be rather a tautological mode of expressing one's self? or would not abnormal physiology and normal pathology constitute a contradiction of terms?

Scorning to take an ungenerous advantage when we have reason to believe that the printer has not done justice to the writer, (for we feel satisfied that the manuscript would be found differently worded, running no doubt as follows: normal *and* abnormal, *or* physiological and pathological states,) our principal object in directing attention to this, has been to show what a difference the dropping of one word (*and*) and the transposition of another (*or*) makes in a sentence, and also to prove that those who criticise the efforts of others should do it in a spirit tempered by justice and charity.

DENTAL REVIEW OF LONDON—NOVEMBER.

"ANCHYLOSIS OF THE INFERIOR MAXILLA CURED BY THE METHOD OF PROFESSOR RIZZOLI. (From 'L'Sperimentale et Racoglitore Medico de Fano.')—The patient, who was named Louise Vaiola, and was about twenty-three years of age, appeared to be of a lymphatic-venous temperament, and had menstruated regularly for nearly eight years. A short time after the appearance of this function, she perceived that the left commissure of the lips was visibly drawn away from the same side, without, however, any cause being discoverable for the change. About the same time a slight but continuous pain made itself evident at the left posterior angle of the lower jaw, and went on increasing, assuming the lancinating character, and accompanied by tumefaction about the bone; the surrounding soft parts became red, swollen, and painful; and, in a word, all the symptoms of the formation of an abscess showed themselves. Without consulting any surgeon, the patient herself applied local fomentations, which probably hastened the formation of the pus, and which eventuated in the bursting of the abscess internally near the last molar tooth but one; immediately the pain, redness, and swelling disappeared as if by enchantment, and the only symptom which remained was a certain stiffness of the jaw, the movements of which became gradually more difficult, painful, and finally altogether impossible, and for eight years she remained in this miserable state.

"On the 4th of December, 1858, the patient was admitted into an hospital. At this time the left cheek was more depressed than that of the opposite side, and an exploration being made along the horizontal ramus of the jaw, the fact was established of a loss of osseous substance near the posterior angle of the jaw. The finger when introduced inside the cheek was also stopped by strong adhesions of cicatricial tissue, and the teeth were to be found in their alveoli, all except the two upper incisors, the absence of which allowed of the introduction of some liquid nutriment.

"It is not our intention to enter into the question of the cause of the disease, as that would lead us too far from our subject. It remains for us to describe the actual operation, as performed by the author on the 12th of December.

"The patient being seated, and her head supported against the breast of one assistant, while another drew down the lower jaw, the operator made an incision in the *cul-de-sac* which united the lip and gum of that side, exactly at the space which corresponds to the second and third molars; this incision divided not only the mucous membrane, but also the subjacent soft parts, so as to lay bare the lower border of the jaw; by this wound was then introduced the straight and blunt branch of the bone forceps, which embraced the internal border of the jaw, so that the cutting edge of the instrument was easily placed on the outside. A slight force only was necessary to completely divide the maxilla at one stroke, and thus restore to the jaw the motion which it had lost for eight years. The operation was not interrupted by any complication, either during or after its performance. * * * * * * * *

"The girl who was the subject of this proceeding is now quite cured; she is able to separate her jaws widely; to chew her food—to eat, drink, laugh, speak, as in the normal state, and will soon return to her family, among whom she is at present an object of wonder and delight."—(*Presse Médicale Belge*, and *Dub. Med. Press.*)

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"CASE OF OVARIAN TUMOR CONTAINING HAIR, TEETH, ETC. By S. J. A. SALTER.—The patient was a married woman, aged forty-nine, the mother of several children. She came to Guy's Hospital in consequence of having had, for some weeks, pains and uneasy sensations in pelvis. Upon an examination being made *per vaginam*, a tumor was felt on the right side of the uterus, about the size of an orange. Nothing was done; but after the patient had been in the hospital about a week or ten days, she was suddenly seized in the night with symptoms of acute peritonitis, and in a few hours she expired. The post-mortem examination showed that the right ovary had been converted into a cystic tumor, which had burst, and some of its contents escaping, had been the cause of the fatal peritonitis. Upon opening the cyst, a quantity of serous fluid escaped; it appeared to be composed of serum and fatty matter, and within were found large white masses of fat and bundles of hair. Upon removing the loose contents of the tumor, the interior was seen to be lined with a soft, pink, serous-like membrane; on the anterior surface the crown of three teeth projected free, and beneath them could be felt a mass of bone; close to this was a projection of a brown color, about the size of a broad bean, from the surface of which sprouted some fair pale-brown hair. Of the three teeth, the two largest were implanted in the subjacent bone by means of true fangs; the smaller one was simply adherent to the lining membrane, and had no fang—a condition not unfrequently seen in congenital teeth—teeth, that is, which are already in the mouth at birth. The teeth resembled a *dens sapientiæ* and two premolars, one of the latter being destitute of a fang. The two larger teeth contained pulps; in the smaller, the pulp cavity was completely obliterated, the dentinal tubes radiating from a central point, not a cavity. Under the microscope, sections, both vertical and transverse, of all three tissues—enamel, dentine, and crusta petrosa—presented every normal appearance; and it would be utterly impossible, from structural examination, to discover any difference between these and ordinary human teeth. But the most interesting result of this investigation was the discovery of nerves in the tooth-pulp; nerves having as yet, I believe, never been recognized in any of these ovarian tumors. Let me now enumerate the different structures that have been found from time to time, by different anatomists, in these ovarian developments. Mr. Gray has found a *nervous centre;* I have found *distributed nerves.* Besides these, *blood-vessels, bone, periosteum, dentine, crusta petrosa, enamel, tooth-pulp, unstriped muscle, striped muscle,* (?) *areolar tissue, adipose tissue, epithelium, sweat-ducts, sebaceous follicles, fœtal hair,* have all been recognized in these growths. Mr. Salter shows that these ovarian formations are not dependent upon sexual intercourse. Undoubted instances are well known of their occurrence in the virgin. Such cases are not numerous, but they do occur; and one of the most striking, and one entirely reliable, came under the cognizance of Rokitansky, in a little girl *six years of age.* The parts are now in the Imperial Pathological Museum at Vienna. The question as to what calls forth these ovarian developments, appears to the writer to receive its answer, rather than explanation, in analogy—in the analogy which these formations have to the non-sexual reproduction which is known to prevail in many of the lower animals."—(*Guy's Hospital Reports*, vol. vi., third series.)

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEO. J. ZIEGLER, M.D.

Lecture on Dentition and its Derangements. By A. JACOBI, M.D., Professor of Infantile Pathology and Therapeutics in the New York Medical College. "Although the earliest development of teeth is of considerable importance, I shall not dwell upon it longer than is necessary to a simple elucidation of the process. A knowledge of the origin of the teeth, and their first development is, however, required in order to understand the manner of their final protrusion through the gums. The rudiments of the teeth are observed as early as the sixth week of fœtal life, when the embryo weighs but fifteen grains, and is little more than half an inch in length. A deep groove first appears lined with mucous membrane, within the external alveolar margin of the upper maxillary bone. It has been named, by Goodsir, the primitive dental groove. According to the concise description of the anatomical researches on the formation of teeth, given by Harrison, the germ of the anterior deciduous molar tooth is formed first, appearing as a small papilla on the floor of the primitive dental groove; next the germs of the canine teeth are formed in the same manner; and about the tenth week of fœtal life those of the incisors, and lastly, those of the posterior deciduous molar teeth. This *papillary* stage is followed by the *follicular* and *saccular*, from the fourth or fifth months of fœtal life upwards. Delicate processes extend from the sides of the primitive dental grooves over each papilla, and by meeting before and behind it, inclose it in an open follicle. About this time the papillæ begin to change their form, and to assume that of the future teeth. The follicles become closed by membranous processes extending over the margins, and form sacs which continue from the fifth month of fœtal life to the period of the eruption of the teeth at different periods after birth.

"The osseous development of the teeth commences at this period. Without any preceding formation of cartilaginous substance we discover an osseous deposit on the dental pulp, which, increasing in size from the surface of the sac, augments its volume from day to day. The dental pulp, wherever it is covered with this osseous layer, has a reddish tinge, more so than its other parts. The deposition of osseous matter on the dental pulp commences either from its surface, or from the contents of the sac, probably from either; the half-liquid contents of the sac continually increasing their percentage of phosphate of lime. When the ivory shell is formed in the dental sac, the interior of its parietal layer has a villous and vascular appearance, like mucous membrane, with a thin layer of granular matter upon it, which may be considered as a sort of epithelium lining the interior of the original follicles. This surface is the matrix of the enamel; it is impossible for this substance to be produced by or from the original pulp, or from its blood-vessels, as the latter has been enveloped in the ivory shell. The enamel appears first in minute crystalline, calcareous particles. It is not very hard, nor thick at first, but solidifies gradually and adheres closely to the ivory, from which it is separated by a thin membrane, like that which is separating the ivory from the pulp.

"The cement forms a thin coating around the root or fang, and formed by the lower or alveolar portion of the dental sac, which invests the root and adheres to it. The order of development of the single teeth depends on the general rule of solidification in the fœtal body, which begins in the median line and progresses to either side simultaneously. Thus the inner incisors are formed first, and the posterior molar teeth last, with the exception of the canine, which appear later. Further, teeth in the lower jaw will develop earlier, in correspondence with the earlier ossification of the lower jaw in fœtal life. A gradual development is also manifest in the number of dental pulps; in the third month of fœtal life there are sixteen, in the fourth twenty.

"After the teeth have been perfectly formed, ivory, cement, and enamel being deposited, they protrude from the jaw, penetrate the gums, and become visible in the cavity of the mouth, in consequence of the natural law of dental growth. The root of the tooth growing, the crown is propelled against the covering of the alveolar sac and the gums. The slight pressure produced thereby gives rise to gradual absorption of the osseous covering, and after this has disappeared, of the gums. By the continued growth of the root of the tooth, and by the progress in the development of the maxillary bone, the tooth is again propelled until the whole crown is visible.

"The crown is the part developed first in the dental sac. With it there is connected a thin and narrow osseous ring; this root of the tooth is gradually progressing to the depth of the dental cavity. While thus the length of the tooth is increasing downward, the gums and the surface of the jaws are little changed. But with the progress of ossification, both in tooth and jaw, the later normal organization of the jaw becomes manifest. The dental cavity is lengthened, its osseous wall becoming more extended. But the growth of the tooth being more rapid, it commences pressing against the osseous covering. Resorption takes place, not only of the covering bone, but of its periosteum, of the gums, and finally of the mucous membrane of the mouth. In new-born infants the gums are hard, firm, and solid, so much so that it has long been called, though it is cellular tissue, by the term dental cartilage. Before the cutting of the teeth it is, as it were, their representative, being the only means of taking a firm hold of the nipple. The gums will sometimes exhibit protuberances and cavities that look very much like teeth, the more so as these prominences are generally pale and of whitish color. The almost cartilaginous consistency of the gums disappears after birth; it gradually becomes soft in the course of a few months; its surface, instead of remaining sharp and pointed, grows blunt and thick, and even exhibits a sort of groove; being rounded only in those few cases in which the gums will be affected with an inflammatory process. After the gums have obtained their soft and loose consistency, the penetration of the teeth finds naturally less difficulty.

"Eichmann reports four hundred observations on dentition, with accurate notices of the time of the eruption of the several groups of teeth. He concludes that teeth do not appear singly, but generally in groups. The period of the protrusion of the several groups is as follows:—

Inferior (middle) incisors	between	the	28th	and	32d week.
Superior " "	"	"	36th		40th "
Anterior molar teeth	"	"	48th		54th "
Canine teeth	"	"	16th		18th month.
First posterior molar teeth	"	"	22d		24th "

"At the 27th or 30th month, there are twenty teeth in healthy children.

"The following table from Ashburner shows how slight is the difference in the observations of authors:—

7th month	2 central lower incisors.
8th "	2 " upper "
9th "	2 lateral lower "
9th to 10th month	2 " upper "
12th 14th "	4 first molar teeth.
16th 18th "	2 lower canine teeth.
19th 20th "	2 upper " "
23d 30th "	4 last molar "

"There is, in fact, but little difference between the two tables, and as a rule you will not find many deviations in healthy children.

"The order which teeth generally follow in their appearance is sometimes changed. Thus Fox, in his account of the diseases which affect children during the first dentition, states that the molar teeth have protruded before the lateral incisors. Brunner, also, reports a case in which a molar tooth preceded the other teeth. Lambert found a canine tooth, the only one protruding, in an infant two weeks old, which grew one and a half inches in two weeks. Raw mentions the case of an infant which had a canine tooth before an incisor; and Baumès reports the same anomaly to have been met with by a friend of his. Such, however, are rare exceptions to the rule, although anomalies of less extraordinary character will be found from time to time. Thus the lateral incisors will precede, sometimes, the central ones; or the incisors will first appear in the upper jaw, thus reversing the usual order, in which the lower is first to exhibit them. So regular, indeed, is the first appearance of teeth in the lower jaw, that children in whom the anomaly referred to occurs are thought to be short-lived by the common people of some countries. Naumann thinks this belief is based on experience, and is inclined to regard it as a fact; and seeking to harmonize public opinion and science, he ventures to offer the following explanation, viz., the appearance of teeth first in the upper jaw proves a precocious development of the upper jaw, and, consequently, of the whole skull; the brain participates in this premature development, and increased irritation and cerebral symptoms necessarily follow. At a later period, in this course, I shall take occasion to show how much truth there is in this popular belief, by explaining in what manner abnormities in the cutting of teeth are important, not as causes, but as symptoms, of anomalous development of the cranium in general; and in what manner the brain may be injured and life endangered by such anomalies.

"A change in the order of the protrusion of the teeth is not the only anomaly that we meet with, for the time of their first protrusion will sometimes be found to differ much from the average age of their appearance. The first variation of this kind which I will notice is the appearance of teeth at birth. This singular anomaly has now been observed many times, as the following examples which I have been able to collect will abundantly show:—

"The younger Pliny states that the renowned Marcus Curius, consul of the Roman republic two hundred and seventy years before our era, had a full set of teeth at birth. This was the reason of his being named

Dentatus. The same author mentions the case of Papyrius, and of a lady, named Valeria, who had all their teeth at birth. Zoroaster, the Persian legislator, is also reported to have had all his teeth at birth. The old historians, from whom Weinrich took the facts, probably thought he was destined to become the exponent of wisdom and morals, from being so extraordinarily and precociously gifted. Louis XIV. of France, whom some writers call the great, because he lived contemporaneously with some great men of his country, was born with two teeth; as was also his Secretary of State, Cardinal Mazarin. The celebrated Grotius, who then lived in France, prophesied that the royal baby would prove a dangerous character, and that like the nipples of his wet-nurses, bleeding and torn by the voracious infant, the neighboring sovereigns would be the subjects of the depredations and robberies of the future king. Scottus, in his *Physiologia curiosa*, relates, from a report of Nieremberg's, the case of a Spanish dwarf, who had all his teeth when born, and never lost one of them, got a beard in his seventh, and had a son in his tenth year. Old Heister repeats the report of Kauliz, of a child born with two incisors, which soon turned black; the child grew thin and emaciated, and died with rachitis when a year old. In Buchner's collections there is the case of an infant, twelve days old, who had teeth, and died soon after of a papulous and vesicular eruption, with consecutive desquamation (hereditary syphilis?). Lanzoni reports the case of a new-born infant with two rows of teeth.

"We learn from Schurig, that Crausius observed two incisors in the lower jaw of a fœtus in the sixth month of utero-gestation. Schenk reports a similar case. It is stated in *Vita Peirescii*, that a woman gave birth to a child with long hair and teeth. Thomas Bartholinus is of the opinion that such congenital teeth are the cause of the vagitus uterinus. Guldenkiel reports the case of the daughter of Navinius, an officer at Camenz, who was born with two incisors. Helwich has several cases of boys born with teeth in the lower jaw; and Daniel Ludovicus relates the cases of new-born girls, having teeth in either jaw, and injuring their tongues by them. Similar cases have been reported by Johann Rhodius, Gœckel, Mazarinus, Simon Majolus, Alexander Benedictus, Hildanus, Balduinus, and Polydorus Virgilius.

"Gensel reports the case of a boy who was born with two incisors. Schlenck, E. von Siebold, J. Ph. Horn, Mercklin, and Storch, have seen the like, without, however, mentioning the sex of the children. Vesti relates the case of his own daughter, who was born with a tooth. Deharding observed a tooth in a fœtus of six months; another in an infant three days old; and four teeth in a new-born infant. J. F. Lobstein gives the case of a child born twenty days after the ninth month of utero-gestation, with six incisors. Reveillé-Parise met with four canine teeth in an infant of four weeks, two of which had cut before birth; the development of the other teeth was equally precocious. Meissner saw two incisors in a new-born child, one of which fell out in the course of a few days; in another case the same thing happened, but a second tooth followed soon after, both of which were firmly imbedded in their alveoli and proved to be of the same nature as temporary teeth generally. Two incisors, observed in a new-born infant in the Paris foundling hospital, by Billard, fell out after six weeks. Mende observed two upper incisors in an infant; they were loose and movable, produced pain when touched; the mouth had an oblique direction, and the margins of the maxillæ were connected with each other. Although the teeth were extracted, the infant was unable to suck, and died of trismus on the fourth day after birth. Canton reports the case of a child in the practice of Dr. Tomes, born with two teeth in the lower jaw, by which the breast of the mother and its own upper jaw had been injured. On examination he found two sharp, rough incisors, protruding from the centre of the lower jaw. They were ill shaped, imperfectly coated with enamel, and loose in the gum, and stood across, instead of in a line with the alveolar arch. They were removed, and it was found that the fangs were not more than one-third developed. In fact, the teeth had attained about the normal amount of development for the age of the child, but had protruded through the gums before they were fitted for eruption. An after process had been effected before the preparatory one had been completed. A similar case occurred in Canton's own practice. Brown mentions the case of a child born with the central incisors through the gums. They were extracted. Two other children were afterward born of the same mother, in each of whom the same anomaly was found. All the children were females. The teeth were allowed to remain. Crump and Lethbridge have each observed a case of complete dentition at birth; the case of the former observer occurring in a still-born negro child. The sockets were very imperfectly formed. Baumes, while quoting the cases of congenital teeth observed by Columbus, Van Swieten, Marcellus Donatus, and Antigonus, reports the case of a French lady who bore a girl with two congenital incisors in the upper jaw, followed by two teeth on each side of the former, in the same jaw, three days afterward. The infant died in convulsions. Richard III., and Mirabeau, the hero of the commencement of the great French revolution, had teeth when they were born. Similar cases are reported by Churchill, Fleming, Denman, while the celebrated Haller collected nineteen. I cannot conclude this long list without adding that Whitehead, the worthy professor and clinical teacher at Manchester, England, removed two teeth from the lower jaw of a newly born infant, in order to facilitate suckling. They were reproduced at the time when the canine teeth were formed, viz., after a year and a half, instead of the usual time of seven or eight months.

"In Billard's opinion congenital teeth are not firm, but are liable to get loose and be lost; but such is not the experience of Meissner and others. The last author is, as a rule, opposed to the advice of Billard, and the practice of Whitehead, of extracting such premature teeth when they prevent suckling. Meissner's opinion is, that no animal is prevented from sucking by the teeth in its mouth—a theory which is good enough for animals, but not for our race. Whitehead's case, in which it was necessary to remove a tooth to enable the mother to nurse the child, the fact that the nipples are very liable to become sore where the teeth are fully developed before weaning, and finally the few cases reported above, in which congenital teeth did not fall out to give place to the real temporary teeth, are valid proofs against such practice, at least in a number of cases.

"Congenital teeth have been made the subject of special remarks by Dr. Nessel, professor of dental surgery at the University of Prague. As his opinions differ somewhat from others, I will state them more definitely. He removed congenital teeth in three cases. In his opinion, they are, properly speaking, not genuine teeth, as they differ greatly in substance and form, and especially in the nature and consistency of their exterior layer. They are less firm and solid, and their enamel is white, but thin, and not formed at all in some parts. They are not inclosed in the dental alveolus, but have a loose attachment merely to the gums. The real teeth will appear afterward; and his impression is, that such precocious formations are principally observed in individuals who will show the symptoms of general scrofula in more advanced life. He therein coincides with *Capuron's* opinion, who always considers the premature appearance of teeth as a symptom of a morbid constitution. He removed them, not because of any inconvenience to the mother on nursing the infant, but because, in sucking, the tongue is brought forward, and is liable to become sore and ulcerated from the continued contact. Some of Nessel's remarks correspond with Lassaignac's statements, who, by careful chemical investigations, found the teeth of younger animals to contain more organic matter than the older, as in the case of their bones; but he is certainly mistaken in regard to those congenital teeth which prove to be real temporary teeth.

"In Whitehead's cases, and in some others, the extracted teeth were reproduced. The facts, however, are sufficiently numerous, proving that this will not take place in every instance. Indeed it cannot, where the congenital are genuine deciduous teeth."

(To be continued.)

"*Chemical and Physiological Studies on Bones.*—The following are the results of a remarkable treatise on this subject presented to the Paris faculty by Mr. Milne-Edwards:—

"1. The substance of the bones results from the combination of *ostein* with the salts of lime.

"2. Gelatin can form a particular chemical combination with the basic phosphate of lime.

"3. It is this chemical compound which appears to form the bony tissue.

"4. The carbonate of lime present appears for the greater part only as a product of the decomposition of the phosphate, brought on by the fluids of the organism.

"5. The variations met with in the relative proportions of the phosphate and carbonate of lime depend first on the length of time during which they have undergone a nutritive decomposition; and secondly, on the equilibre maintained between the rapidity of this decomposition and the resorption of the compounds produced.

"6. In the child the proportion of carbonate of lime is less considerable than in the adult and aged.

"7. Bones, which must be considered of recent formation, such as callus, etc., are less rich in carbonate of lime than those which have arrived at their perfect development.

"8. The spongy tissue, which is undergoing the process of resorption, is richer in carbonate than the compact tissue.

"9. In children the proportion of earthy matter is not so great as in the adult; but this difference does not appear to depend upon a disparity in the nature of the osseous substance, and to keep itself in rapport with the proportion of that substance to that of the vessels.

"10. Diet and hygiene can make a sensible impression in the composition of the bones. Dogs under a succulent and sweetened diet present less earthy matter, and especially less carbonate of lime, than those fed on meat and fat exclusively, while both take up various quantities of phosphate.

"11. The arrest of the circulation of blood appears to have no influence upon the chemical composition of the bones.

"12. The diversity existing in the composition of bones of individuals belonging to one and the same species is often greater than if compared with that of animals from a different zoological group.

"13. Contrary to the assertions of M. Al. Friedleben, it must be assumed that chondrin and gelatin are two different substances."—(*Amer. Drug. Circular*, December, 1860.)

Lecture on "Salt and other Mineral Constituents of Food," delivered at the South Kensington Museum, London, by EDWIN LANCASTER, M.D., F.R.S. The following extract from a highly interesting and instructive lecture on this subject (*Ibid.*, January) will serve to show the absolute necessity of keeping the system fully supplied with a due proportion of its mineral elements as well as its organic constituents, in order to thus insure the normal nutrition and development of all the various tissues of the body, and preserve as well as restore when lost, the healthy integrity of the several parts and of the whole economy.

"To-day, according to the announcement in the prospectus, I wish to bring before you what I have called the Mineral Constituents of our Food, to which, generally speaking, we attach very little importance. Persons who prepare our food—cooks in the kitchen, ladies who superintend cooks and order dinners for large families, and people who consume food from day to day—never think of asking whether food contains mineral constituents in the right proportions to secure health, and without which babies get rickets, young ladies get curved spines, fathers get gouty, and mothers get palpitations; and they do not think of ascribing these to the food which has deprived them of the proper mineral constituents. I think I can show you that the importance of this consideration can hardly be overrated.

"In order to illustrate the importance of these things, I must show you the elementary constitution of human beings. Suppose we take a human being, put him in a retort, and apply heat to him; we shall find that, first, 111 lbs. of water will actually rise up from a body weighing 154 lbs.; and the next thing that comes off will be carbonic acid gas; then there will be ammonia; and then you might get a little sulphureted hydrogen and phosphureted hydrogen, and gases of that sort; but you will at last get a quantity of ashes. Now, in the water you get the oxygen and the hydrogen. In the carbonic acid gas you get carbon and oxygen, and in the ammonia you get nitrogen and hydrogen. In the ashes which are left we get phosphate of lime, carbonate of lime, fluoride of calcium, chloride of sodium, sulphate of soda, carbonate of soda, phosphate of potash, sulphate of potash, peroxide of iron, phosphate of iron, phosphate of magnesia, and silica. These are the things of which I shall have to talk to you to-day, without which we cannot live. And if you will persist in having only refined sugar and the whitest flour, rejecting the brown; if you will persist in rejecting the salt and avoiding the liquor in which meat is boiled, you may get albumen and fibrin, but none of these mineral substances; and then the first attack of fever or cold may prove fatal. Four men shall be traveling outside of an omnibus—one may get acute inflammation of the lungs, another bronchitis, and the other two shall come off free. Was it the riding outside of the omnibus that did it? No: it was the state of their blood. They had lived somehow irregularly. So you may find half a dozen children all exposed to the contagion of scarlet fever; two take it, one dies, and the other four are free; but the two that have caught it have lived in such a way that their blood has readily taken in the contagious disease; and the one that has died has got in such a condition as to produce death. Hence the importance of attending to these subjects thoroughly—not getting a little knowledge of them, but a knowledge of what is necessary to the feeding of men. If not, we shall somehow or other suffer."

Cleaning of Platinum.—A correspondent of the *Chemical News* offers the following on this subject: "A remarkably rapid and perfect method of cleaning platinum apparatus consists in gently rubbing upon the dirty metal a small lump of sodium-amalgam. Sodium has the curious property of lending to mercury the power of 'wetting' platinum in so complete a manner that the positive capillarity between platinum and an amalgam containing even only a few per cent. of sodium appears to be as great as that between mercury and zinc, with this important difference, however—in the former case the 'wetted' metal does not suffer the least trace of amalgamation. Even when foreign metals, such as lead, tin, zinc, silver, are purposely added to the sodium-amalgam, the platinum surface suffers no disintegration. When the amalgam has been rubbed on with a cloth, until the whole surface is brilliantly metallic, water is applied, which oxidizes the sodium and allows the cohesion of the mercury to assert itself. On wiping the mercury off, the platinum surface is left in admirable condition for the burnisher. I suppose the sodium to act here chiefly as a diluent, diminishing thereby the cohesion of the mercury and allowing the adhesion between that metal and the platinum to predominate—a result which is certainly assisted by the mercury enabling the sodium to offer a clean surface to the platinum, and so allowing the specific adhesion between the two latter metals to be exhibited."

"*Electro-Zincing,* by MM. Person and Sire.—In a hundred parts of water dissolve ten parts of alum, and one of oxide of zinc: this zinc-bath should be kept at a temperature of 15° C. The pieces of metal which are required to be coated with zinc being previously well cleaned, are arranged so as to form the negative pole of a battery, and for the positive pole one or more pieces of zinc are introduced, according to the shape of the article to be zinced, and having as near as possible the same amount of surface. Contact with the battery being made, by the current from one pair of plates, the dimensions of which should vary according to the surface to be coated, the precipitation of zinc proceeds as easily as that of copper in the ordinary electrotypic process, the deposit taking place indifferently on any metal—on platinum as well as on copper or iron. When copper, coated with zinc, is heated, there is produced a coating of brass; this transformation is likely to receive many applications. The elevation of temperature of the zinced iron augments the adhesion of the surface of zinc. MM. Person and Sire state that the thickness of the layer which is deposited increases in proportion to the time occupied in the deposition; that the reduced zinc has all the properties of the purest metal; and that it completely prevents the oxydation of the object which it coats."—(*Chemical News.*)

"*On the Preparation of Non-conducting Surfaces for Electrotyping.* By BERNARD PIFFARD.—Having been lately occupied in making some experiments in preparing non-conducting substances for electro-deposition by a chemical process, I send you the result, hoping it may prove useful to some of your readers. For this purpose I prepared a sheet of gutta-percha as follows:—1st. With a solution composed of equal parts of white of egg and a saturated solution of common salt in water, and dried thoroughly. 2d. With a strong solution of nitrate of silver, and, when dry, I exposed it to light till quite black. 3d. With a saturated solution of proto-sulphate of iron. This last produces a highly-conducting surface of metallic silver. On attaching it immediately (before dry) to the wires of a battery, and immersing it in a solution of sulphate of copper, I obtained a very uniform and rapid deposit without the help of guiding wires."—(*Ibid.*)

"*Tobacco in Camp and College.*—The deepening conviction that the habitual use of tobacco is a source of physical and mental degeneration has steadily obtained a firmer hold of the public mind since the thorough exposition of the opinions of the medical profession in the columns of this journal. To that discussion the late manifesto of Sir Benjamin Brodie must be considered as a supplement, affording an authoritative sanction to the conclusions at which we arrived in summing up the debate. In this country of free discussion and free action, the changes wrought by conviction are worked out slowly and spontaneously by individual process of resolve. Across the channel, ~~where *facta non verba* is the rule of the empire~~, the opinions elicited by the great English controversy have borne fruit in deeds. It will be remembered that certain statistical results have been obtained at the Ecole Polytechnique and other public schools and colleges, attesting that the smokers were ~~also~~ the dunces, and that the intellectual as well as the physical development of the students was checked by the use of tobacco. The Minister of Public Instruction has published a circular, addressed to the directors of schools and colleges in France, forbidding the use of tobacco and cigars by the students. The Minister of Public Instruction and the Préfet of the Seine are said to be 'unceasing in their exertions to remedy the evil.' As Paris alone contains 29,000 pupils, the edict applies to a large population. It would be well could the authorities of the English colleges and universities decree the same abstinence for all students, in residence or otherwise under control. There are two classes of men in England, who at this moment are addicted to frightful excess in tobacco-smoking, and suffer the evil consequences in depression, debility, hebetude, and nervousness. These are students at college, and officers in barrack, garrison, and camp. ~~The latter especially smoke incessantly, beginning early in the day, and continuing till the night has fallen.~~ The dullness of barrack life, which incites to the excess, is deepened by the habitual depression which tobacco ~~in the end~~ produces. The depressed and debilitated condition of numbers of these young men, who, from such depots as the camp at Aldershott, visit London, has long been the subject of observation among the surgeons who are called to treat their complaints, and have the opportunity of comparing their nervous force with the standard of civil life. Nowhere are the evils of tobacco-smoking more rampant than in the camp and the college. Is it impossible that higher authority should intervene to ameliorate their condition?"—*Lancet.*

MISCELLANY.

Irregular innervation and muscular action frequently very seriously interfere with the healthy operations of the economy. These abnormities may be so profound and general as to compromise life itself, or so slight and partial as to be scarcely noticeable. Some, however, like strabismus, are both troublesome and annoying, not only counteracting important functions, but unpleasantly affecting the personal appearance of those thus afflicted. Occasionally the irregularity may be more vexatious than injurious, as in the following instance of spasm of the depressor muscles of the lower jaw, which is recorded in a recent number of the *Medical Times and Gazette*, (Dec. 15.) "From the variety of cases of affection of the nervous system attending Dr. Brown-Séquard's practice, we select the following, as illustrating a curious and very rare form of local affection. The patient appears to be in general good health, and suffers nothing, except the annoyance of his so marked and peculiar deformity. He is an intelligent, well-educated man, about sixty years of age, and states that, whenever he is not moving his jaw in eating or in talking, it falls, and thus his mouth is left open, giving a vacant and silly expression to a face otherwise intelligent. As stated, he can eat well and talk well, and the masseter and temporal muscles contract well on both sides; but, when the jaw is depressed, the muscles below the chin are found to be spasmodically contracted. The depressor muscles of the jaw are, therefore, as Dr. Brown-Séquard considers, in fault, being over-active."

In a letter to the same journal, (December 22,) a writer, over the signature of "Chirurgicus," gives the following interesting history of a case of symptomatic fever, which occurred in his own person: "When a student at one of the London Hospitals, a few years since, a friend (wishing, it may be, to gain some practical experience in his profession as a dentist) volunteered to operate on one of my teeth on which he descried a dark spot, and which he considered symptomatic of decay. I readily underwent the 'slight' operation, (but which consisted in filing nearly one-half of the tooth away.) So far, so good,—the dark spot was no longer present. A few hours afterward I was seized with all the symptoms of severe fever: quick pulse, (108;) hot, burning skin; foul tongue; intense headache, etc. At the same time that the fever came on the remainder of the tooth was also affected with intense pain,—in fact, the fever and toothache seemed to run the same course; but both ceased after about thirty-eight hours. Last week I had the remainder of the crown of the same tooth removed, and the fang bored for the purpose of fixing a false tooth;—strange to say, the same symptoms occurred as I have described as taking place three years ago, although more severe—the headache becoming almost unbearable; the whole lasting about forty-eight hours. Now, I have not the slightest doubt in my own mind as to the cause of the fever: it was doubtless the irritation or inflammation of the peripheral nerve, which reacted on the nervous centres, and produced as its effect the morbid train of symptoms described as fever. May not many cases of the so-called idiopathic fever be often referable to some local cause which is generally overlooked? It was the opinion of some of the most eminent continental physicians but a few years since that all fevers had some local origin—perhaps they were not far wrong. In the present instance, had not the same course of events recurred, I should doubtless have set down the fever as due to some miasma, etc."

In the report of the proceedings of the London Pathological Society, (*Ibid.*, Dec. 15,) it is stated that "Mr. Canton exhibited a specimen showing arrest of development of the ascending ramus of the lower jaw. It was removed after death from a girl, aged sixteen years. Her cast of countenance was peculiar; the forehead and chin receding, with a remarkable falling in of the masseteric and zygomatic regions on the side of the arrest, together with a malformed auricle, which was placed considerably in advance of its normal position. On dissection, no external auditory meatus was to be found; the zygoma of the os temporis had not been formed, and in the situation of the glenoid cavity was a perfectly plane surface. No condyle or coronoid process existed on this side, and the angle of the jaw was undeveloped: the corresponding horizontal ramus proceeded more directly backward than natural. Mr. Canton believed that the preparation would seem to corroborate the view brought forward by Kölliker, and worked out by Tomes, in regard to the development of the perpendicular ramus from the original cartilage of the condyle, which in this instance has either been not formed, or, having been so, was lost; and hence, in the absence of the formative nidus for the ascending branch of the jaw, this part was, as a consequence, wanting."

The Paris correspondent of the *Lancet*, (January 5,) in noticing an interesting memoir on the subject of cretinism, sent to the Academy of Sciences by Dr. Guggenbühl, states that "Although *the* pathognomonic symptom of cretinism is a general stupor of all the functions presided over by the cerebrum, nevertheless some isolated faculties are occasionally found to be well developed; and among the patients at the Abendberg are to be found some who possess astonishing powers of memory, or talent for music and drawing. The hereditary tendency to cretinism, although maintained by some observers, is denied by Dr. Guggenbühl, whose experience tends directly to prove that this morbid condition is exclusively a *local* phenomenon, fostered by the agency of certain exciting local causes; these causes affecting the constitution most powerfully during the first three years of life, and principally during the period of the first dentition; and producing at the same time hydrocephalus, rickets, or other scrofulous manifestations. The principle of the treatment which has proved so satisfactory at the Abendburg institution in the cure of this nervous cachexy is that of fortifying and educating the physical faculties before undertaking the mental training. Experience has taught that the *corpus sanum* must be a precursor of the *mens sana*, and nowhere better than in the case of the cretins has the old adage been verified. For this purpose, tepid aromatic baths, shampooing, cod-liver oil, iodide of iron, electrization, nutritious diet, and plenty of exercise in a healthy atmosphere, have been employed, and with the best results. The asylum for cretins should at one and the same time be an hospital and a school; workshops, agricultural pursuits, all should be included in the treatment, and each patient should be allowed to select a pursuit or a trade. So successful has this system proved, that its originator mentions that in all the cases committed to his care during the first six years of life he has been able to effect more or less complete cures, excepting those in which convulsions, always a grave complication in this malady, were present."

It is well known that injuries of the teeth, tongue, and other parts of the mouth frequently result from convulsive action, and it may sometimes be important for the dentist to be able to form an approximate diagnosis of the causes thereof, without direct inquiry, as persons subject to spasmodic affections are occasionally ignorant of the occurrence of the paroxysms, or, what is more common, loth to acknowledge their infirmity; hence the following graphic description of an epileptic fit and its consequences, from an able paper on convulsive diseases, by Dr. Radcliffe, (*Ibid.*,) may not be altogether devoid of practical value. "In the severest and most characteristic form of the paroxysm, the patient utters a peculiar choking noise, or a sudden and startling cry, and at once falls down convulsed and insensible. The convulsions are usually more marked on one side of the body than the other. They drag the mouth toward the side which is most affected, and twist the face in the opposite direction until the chin may press upon the shoulder. They push forward the tongue, and crush it between the teeth. They clasp the thumb upon the palm, and hold it down with the force of a giant. They seize the walls of the chest and abdomen, and prevent the possibility of breathing. They stiffen the limbs, so that the joints cannot be bent without some risk of breaking the bones. In some instances, they even take hold of the bladder, the bowel, or the seminal vesicles, and expel the contents; in others they may be so violent as to bite off a large portion of the tongue, to break the teeth, or to dislocate a limb. At first, it seems as if the spasms would never relax; but afterward they are separated by intervals, which grow wider and wider as the paroxysm draws to an end. The convulsions, that is to say, are tetanoid at first—clonic afterward."

In the course of his notes on foreign medical intelligence, the London correspondent of the *New Orleans Med. and Surg. Jour.* writes that Mr. Coote invited his "attention to several patients in different stages of treatment, in whom the cicatrix, the result of a severe burn upon the chest and neck, had involved in its contraction the chin and under lip, both of which were drawn down upon the sternum, and there immovably fixed—the entire eversion of the lip, and consequent flow of saliva over the surrounding tissues rendering these poor patients most repulsive in appearance. All such cases, notwithstanding their severity, and the almost ligamentous character of their adhesions, were treated by extension only, applied by a simple mechanical contrivance, and persevered in for many months—the results being most happy. A well fitting ring of metal, padded, is fixed around the patient's waist, forming the support behind, of a steel upright, which again is steadied in its position by straps around the shoulders; from the upper end of this project forward on each side of the neck, and beneath the chin, two well-padded supports, fixed to the upright by movable screw and cogwheel joints, by which they may be raised or depressed by means of a key, at pleasure. By this simple contrivance, permanent, steady extension is effected, resulting in the most perfect cures."

In the report of the clinic of Prof. Post, at the Univ. Med. College, N. Y., (*Am. Med. Times*,) the following case of steatomatous tumor of the face is recorded: "J. M., aged twenty-one, has a movable, flattened, ovoid tumor, the size of an almond, situated between the skin and mucous membrane of the cheek, a half inch below the left angle of the mouth. This is obviously a steatoma—an encysted tumor, benign in character, slow of growth, painless, and generally giving rise to no inconvenience, though they sometimes get inflamed, and occasionally grow to a considerable size. This tumor has existed eight months. It is best removed by bisecting the cyst, turning out the contents, and then dissecting out the cyst. In removing a tumor in this situation, the facial artery should be remembered and avoided. A bistoury was passed through the whole length of the tumor, and the steatomatous matter squeezed out, after which the cyst was dissected out and the wound closed by suture."

The following general observations on the development of foreign bodies in the ovaries, are offered by Dr. H. H. Toland, in the report of a case of fibrous tumor of the right ovarium, (*Pacific Med. and Surg. Journ.*, November,) which he successfully extirpated. "The diseases, both functional and organic, of the ovaria, are very numerous. Of the latter, cysts occur more frequently than any other lesion, and are supposed to result from disease and distention of one or more of the Graeffian vesicles. When only one vesicle is implicated, it constitutes the most simple form of ovarian dropsy, and consequently the one most easily controlled. Ovarian cysts do not, however, always contain a fluid, being sometimes filled with adipose matter, bones, teeth, and hair. An encysted tumor of this character, which I removed in 1834, contained balls of fatty matter about half an inch in diameter, enveloped with hair from one to two feet in length; also irregular portions of bone and teeth, surrounded in some of the cysts with a fluid of the consistence and color of honey. Neither bones nor teeth were found in the cysts that contained hair and adipose matter."

Additional testimony to the value of M. Chassaignac's drainage tubes in the curative treatment of abscesses and morbid conditions of the bones attended with suppuration, is given in *Championnière's Jour. of Pract. Med.* for November. As tents of sponge and other substances have proved useful in similar cases, there is little doubt but that highly favorable results would be obtained by the more general application of this plan, and especially in the treatment of alveolar abscess. In these cases, however, a simple straight tube, instead of one doubled upon itself, would be more generally applicable. The general plan of operating by M. C., is by introducing a trochar to form an opening and act as a guide to a perforated elastic tube which, after its passage and exit, is bent upon itself and its ends tied together "so as to form a sort of collecting drain which, receiving the morbid secretion through its lateral apertures, allows it incessantly to flow outward, and thus effects the desiccation of the abscess and promotes the cicatrization of the bone. In his first applications of this variety of surgical draining, Mr. Chassaignac was under the impression that his procedure merely prevented the stagnation of puriform matter; but as his experience on the subject increased, he found that instances of cure of necrosed or carious bone became so numerous that no further doubt now remains in his mind as to the curative action of this mode of treatment of caries or necrosis."

In the course of his able lecture on the mineral constituents of the food, from which an extract is given in a preceding part of this periscope, Dr. Lancaster thus refers to the quantity and use of silica in the human body: "Here is silica, which exists in the small quantity of three grains in the human body—it is distributed in the nails, but more especially it is found in the enamel of the teeth. Teeth have a coating of enamel, which is formed of a certain quantity of silica, so that you see it seems to be necessary to the comfort and welfare of man."

In the last number we gave a short extract descriptive of the babiroussa, which, among other things, is remarkable for its peculiar denture. More detailed information upon this point is afforded by the following from *Cassell's Nat. History,* which contains a description and drawing of this singular animal. "The babiroussa differs somewhat in dentition from the hog, the incisors being four above instead of six, and the molars five on each side, in either jaw. The upper canines or tusks of the male emerge directly upward from their apparently distorted sockets, and sweep with a bold arch backward, attaining to a very great length. The skin is thick, coarse, of a blackish tint, and sparingly beset with very short, bristly hairs. The tusks of the lower jaw are long, strong, and sharp, emerging like those of the boar. The tusks of the upper jaw do not pass out between the lips, but cut their way through the skin, nearly half way between the end of the snout and the eyes. The tusks of the lower jaw are formidable weapons. The male, when adult, equals the largest hog; the female is of much inferior size, and destitute of the curled upper tusks, or has them only rudimentary."

The following account from Cassell's work, of the denture of another animal of the same class, is both interesting and instructive: "There is a genus of animals, the phacochere, which so resemble the hog in manners, form, and aspect, that, were it not for the peculiarity of their dentition, they would necessarily be included in the genus *Sus.* Instead, however, of presenting the ordinary structure, the grinders have a great analogy with those of the elephant; they are composed of vertical cylinders of enamel inclosing an osseous deposit, and are cemented together by cortical substance, or *crusta petrosa.* It is long before the root of these teeth is perfected, and they advance in rotation from behind, pushing before them the first molars, which, in old individuals, are found to be either greatly reduced, or to have entirely disappeared. It is not till after ceasing to push forward that the roots become consolidated. With regard to number, they appear to vary. In the skull of a phacochere, which was carefully examined, the molars were found to be four on each side above, and three below. From the first molar above, which was very small, to the third, the increase in size was gradual; but the fourth molar was long, and narrowed gradually as it proceeded backward. Had the animal lived much longer, it is probable that the first molar would have disappeared. The incisors were two above and six below. The tusks were enormous. Their head is enormously large and heavy; the eyes are small, and set high in the forehead, which is depressed between them; under each eye is a large, fleshy lobe; and a warty excrescence appears on each side of the muzzle, between the eye and the tusks. The muzzle is very broad, and the ears are erect." The superior cuspidati of another species are thus described by Captain Harris: "Gigantic, and protruding like those of an elephant, the upper tusks were sufficiently hooked to admit of the wearer hanging himself up by them to roost, as did his ancestors of yore, if the ancients are to be believed. By all who saw these trophies in the colony, they were invariably taken for the ivories of a *zeekoe*, (hippopotamus,) the best that I afterward realized measuring less than one-half their length."

In a detail of some researches on india-rubber and gutta-percha, (*Chemical News*, December 1, 1860,) Dr. Adriana makes the following remarks on the adulteration of the latter: "Gutta-percha is often adulterated with the milky juice of another plant, or various other plants. One of these substances used for adulterating it is called *Getah Malabeoeya.* M. Robbu, at Amsterdam, gave me some of that material: it had a grayish-green dark color, was brittle; when broken, the fracture was of a dirty-white color; it gave off a very disagreeable smell; it was somewhat sticky, not unlike glazier's putty. In the unprepared, not purified state, I found its specific gravity at 17° C., equal to 0·97772; while for that which had undergone a purifying process, I found the density at 17° C., equal to 0·9535.* It dissolves in the same solvents as gutta-percha, and, like the solution of the latter in chloroform, it is precipitated from that menstruum by alcohol. Gutta-percha adulterated with *Getah Malabeoeya* exhibits a different color from that which is not so adulterated; the sample given me by M. Robbu had a specific gravity at 17° C. of 0·98239; was less readily soluble in the usual solvents for gutta-percha; especially, also, more difficult of solution in chloroform; it was found not to answer well for being purified and manufactured as the pure gutta-percha."

The *Chemical News* gives from the *Rep. de Chimie* the following, on the removal of nitric acid stains from the skin: "We know that nitric acid stains the skin yellow, and that it is impossible to remove the discoloration by ordinary reagents. We know, also, that these stains disappear only when the epidermis is renewed. M. Schwarz advises for their removal the use of sulphide of ammonium, with the addition of a little caustic potash. By this means the coloring matter is not destroyed, but the burnt epidermis is converted into a soapy substance, which can be scratched off with a small piece of wood, the nail, or rubbed off with sand. By washing with a little dilute sulphuric acid the skin becomes clean and recovers its natural whiteness. M. Schwarz believes that in some cases the above combination might be used as a caustic, and that its application might prove serviceable in certain affections of the skin."

In reply to an inquiry, the editor of the same journal states: "The best way to make carbon crucibles is to take a piece of fine, hard charcoal, and model it to fit the inside of a clay crucible. Bore a hole in the charcoal of sufficient size to contain the subject of experiment, and cut a stopper to fit it out of another piece of carbon; place the whole in a clay crucible, fill up, if necessary, with pounded charcoal, and place the cover on, a small hole being left in it for the escape of gas. Another method is to powder charcoal, and, after moistening with weak gum-water, squeeze it into a clay crucible; a hole is then to be made by pressing in the end of a pestle. When dry, it is fit for use. Much valuable information on this and kindred subjects will be found in 'Williams's Chemical Manipulations,' to which we refer you for further details."

In the course of one of his essays on the History of Chemistry, in the *Chemist and Druggist*, DR. NOAD thus sketches the discovery of several important bodies: "Cobalt was used to tinge glass, in Saxony, in the sixteenth century; but the metal was unknown till the time of Brandt, who discovered it in 1733. Nickel was procured by Cronstedt in 1751. The properties of manganese, which was announced as a peculiar metal by Kaim in 1770, were minutely investigated by Scheele and Bergman several years after. Molybdic acid was discovered by Scheele in 1778, and a metal procured from it by Hielm in 1782, the same year that tellurium was made known by Muller. Scheele discovered tungstic acid in 1781, and soon after a metal was extracted from it by Messrs. D'Elhuyars. Klaproth discovered uranium in 1789. The first description of the properties of the oxide of titanium was given by Gregor in 1791. Vauquelin made known chromium in 1797; Hatchett, columbium in 1801; and shortly after the same substance was noticed by Ekeberg, and named by him tantalium. Cerium was discovered in 1804 by Hissniger and Berzelius. Platina was brought into Europe and examined by Lewis in 1749. In 1803, Descotils, Fourcroy, and Vauquelin announced a new metallic substance in it; but the complete investigation of the properties of this extraordinary body was reserved for Messrs. Tennant and Wollaston, who, in 1803 and 1804, discovered in it no less than four new metallic substances, (besides the body which exists in it in the largest proportion,) namely, iridium, osmium, palladium, and rhodium."

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* This great difference is due to the removal of impurities, among which is sand, as Mr. Munnich told me. This was added, it appears, by the Chinese, to increase the weight.

In the course of a review of some recent researches on the impurities of commercial zinc, a writer in the *American Journal of Science and Arts* observes: "As a general result it appears, therefore, that in all commercial zincs metallic lead is the principal impurity; while it is gratifying to observe that the purest of all the zincs which have been analyzed by Messrs. Eliot and Storer, is that manufactured at the Pennsylvania and Lehigh Zinc Works, at Bethlehem, Pennsylvania. This spelter leaves no appreciable residue when dissolved in dilute acids, and therefore contains no lead; indeed, a trace of cadmium is the only impurity whose presence in the zinc the authors can confidently assert. The ore from which this spelter is made is the hydrated silicate of zinc, (electric calamine,) and it is not surprising that this mineral should yield zinc of singular purity, if the ore be carefully selected."

In relation to aluminum and its alloys, the *Sci. Amer.* says: "The metal aluminum is coming more and more into use. A firm at Newcastle-on-Tyne, England, have begun the manufacture of it on a large scale, in the pure state and as bronze. Unexpected results have been obtained in experimenting with it as an alloy; twenty parts of aluminum with eighty of copper produce a metal which, to the eye, has all the appearance of gold. Alter the proportions, and mix ten of aluminum with ninety of copper, and the result is a metal singularly hard, and of excellent application for pivots and bearings in machinery."

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As a contribution to histology, this essay will prove of more especial interest to the anatomist and physiologist, though it is not entirely devoid of practical value to the therapeutist.

THE

DENTAL COSMOS.

NEW SERIES.

Vol. II. PHILADELPHIA, MARCH, 1861. No. 8.

ORIGINAL COMMUNICATIONS.

PRACTICAL HINTS.

BY J. D. WHITE.

With regard to the size and depth of the cavity for receiving the pivot, that will depend upon the length and diameter of the root. We always try to determine these points before we decide to set a tooth; a quarter of an inch deep is sufficient, or a little more, and a line in diameter for a front root is sufficient. Do not drill away any more of the root than is necessary to make the pivot strong enough to secure the tooth and make it serviceable, because it is true that there will be a little softening around the pivot, and loosening, which will render it necessary to renew occasionally; and hence economy of the root's substance should be studied. Now the root is not yet quite prepared; with a very fine drill dress out the nerve canal beyond the bottom of the hole for the pivot, and fill it with gold; but this filling must be the last act before putting in the permanent pivot; and the gold should be formed into a kind of pin-point shape, and rolled between the fingers to make it very hard and to fit the canal as well as possible; if it be prepared in this manner, it is much more readily removed than if the gold be placed in by piecemeal. The next step in the operation is to select a crown for the case; it should always be a trifle larger than the root, to afford support to the free margin of the gum in the same manner that the enamel does in the natural crown. Besides giving the margin of the gum a natural appearance, it prevents it from irritation by contact with the margin of the root; to make the joint between the root and crown so nice as to prevent accumulations of morbid matters, is a very important part of the operation. When the crown is perfectly fitted to the root, its margin, which is to come in contact with the gum, should be polished as smooth as the enamel of a natural crown, or the gum will always present an irritated appearance. Of course the root is dressed with a file, and the crown of the tooth with the emery wheel rubber, and filed according to the kind of tooth it is. The tooth should be so dressed as not to clash with the lower or opposite teeth during the vibrations of the jaws in chewing. We greatly prefer natural teeth for pivoting, because they look better than porcelain, especially when there is only one or two to be set; porcelain never can be so closely matched as to defy detection. These teeth may decay, but they can be renewed; some persons object to them; in such cases we use artificial teeth, but it very seldom happens to us that we require them. In preparing natural teeth we always wrap them in a cloth and put them in boiling water for about half an hour before using them. It is best to make the hole in the tooth and root as near equal in size as possible; but of course merely drilling a round orifice in the crown of a natural tooth of a proper size, is not always sufficient, because at the bottom of the cavity toward the cutting edge of the crown, the natural cavity corresponds with the shape of the crown; and to drill the orifice large enough to take in the whole size laterally, would make the hole too large in an antero-posterior direction; hence when the hole is drilled, it is necessary, with a small excavator, to cut out the pulp cavity toward the outer angles of the cutting edge, and fill them with gold; a round pivot could not fill up those points, and in a short time blue spots would be observed at each side of the pivot, and, perhaps, decay would set in and spoil the tooth. Of course the terminal extremity of the pulp of a front tooth is flat, and it is necessary to prepare this cavity for a pivot in the same manner as if it were being prepared for receiving a plug when a nerve is dead in a tooth. The next process in the operation is to prepare a proper pivot. The best we know of is wood and gold combined; yet gold has its objections, as it is liable to discolor a tooth; platinum has been substituted, but it is not strong enough; we only use it when we think great strength is not necessary. Drill a piece of close, straight-grained hickory, force into this a gold wire a little larger than is generally used for riveting on blocks of porcelain, dress down the wood, leaving a thin casing only sufficient to protect the gold, and thick enough not to splinter off. We use the wood without having been drawn or packed before it is drilled; but we pack it with a burnisher, when we get it very nearly small enough to be forced into the tooth and the root. The pivot should be equal in diameter from end to end, and when it is thrust into the crown and root, it should require a little force to send it home; and when it is apparently in, it should receive a slight tap with an instrument, with a little peg of wood set on it, to settle it firmly on the root. The fitting of the root and crown should always be conducted with a temporary pivot, so that when the permanent pivot is put in it will fit properly. It happens, sometimes, that the crown requires a little inclination one way or another; this can be done by bending the pivot; whatever way it is bent with the wire in, it will remain; while if the pivot be of wood only, it will spring out of place when it gets wet; besides, the wood alone is not strong enough. We never divide the wood, putting one piece in the crown of the tooth and the other in the root; the motion the tooth is exposed to in use, soon jostles it loose. The habit of some operators of pointing a gold pivot and forcing it into a wooden bushing in a root is not a good operation; or wrapping a little floss silk around a pivot. The wood on the gold pivot should be continuous from crown to root. We will give the *variations* of the operations hereafter.

(To be continued.)

BLADING AND TEMPERING DENTAL EXCAVATORS.

BY D. H. GOODWILLIE, D.D.S.

In an article in the August number (vol. ii.) of the Dental Cosmos, dental excavators were arranged into classes, and a few remarks made upon each class, also upon the proper steel for making these valuable instruments. Not only is it of the utmost importance that suitable steel should be used, but they should have efficient *blades* and be well *tempered.* This last will form the occasion of a few practical remarks at this time in continuation of the subject.

Blading.—The things necessary for this part of the operation are the following, viz.: a large spirit-lamp, a blow-pipe, two hammers, of two and four ounce weights, for large and small instruments, an anvil of small size, a large Arkansas stone, and a fine file. The hammers and anvil should have perfectly smooth faces, for reasons to be hereafter noticed. Having provided ourselves with the above articles, we will proceed by heating and hammering an instrument suitable for making the most simple excavator, the *chisel.* Place the anvil and hammers convenient, so that they may be used without any loss of time after the instrument is brought to the required temperature. As a general rule, the steel should only be heated to a *cherry-red temperature,* for above that temperature the steel will be liable to be burnt, and is then unfit for use. Do not hammer much after the instrument has become cold, as it is liable to form cracks or flaws in the steel by the particles of steel becoming unequally condensed. After the chisel is hammered to the proper size and shape, the edge may be produced by beveling it with the file, or if small it may be done on the stone. Now give the edge of the chisel a slight turn toward the straight unbeveled side, (for reasons set forth in the other article,) and the chisel is ready for polishing and tempering.

Hatchets.—Hammer these the same as the chisels to the size desired, then rub upon the stone on all sides, before the blade is turned, to facilitate the polishing and tempering. To turn the blade, heat to the cherry, red temperature, and turn upon the edge of the anvil with the hammer.

Great care should now be exercised not to turn the blade while the temperature is much reduced. If the blade has cooled before the desired angle is obtained, place it in the flame, and when heated to the right temperature the desired angle may be obtained by turning the blade while in the flame by successive strokes of the hammer, or with the pliers, or it may be turned as at first on the anvil. The blade may now be hammered to an edge, and the cutting edge put on with the file and stone.

Hoes.—The preparation of this class of excavators is the same as the two other classes, but requires the use of the file more than the others to produce the several cutting edges which this class of excavators requires. As this class of excavators has nearly all their blades at right angles, care should be taken in turning to have them at the cherry-red temperature. All blades should have *sharp angles* and not curved ones. After the blade is turned, it is then hammered to the required thickness and the edges made with the file.

Polishing.—If the hammer and anvil have perfectly smooth faces they will also leave the instrument correspondingly smooth, and facilitate much this part of the operation of instrument making. The most efficient way to polish excavators is to use first fine emery upon a buff wheel on the lathe, a little sweet oil being used with the emery, then burnish with a blood-stone or steel burnisher. After this another buff wheel is used with rouge (calcined sulphate of iron) and alcohol. The buff wheels should be covered upon their peripheral surface with soft leather. When this is gone through, the instrument is ready for

Tempering.—The first thing to be done in tempering is the hardening of the steel, which may be done in the following way. Having provided ourselves with some substance with which to coat the steel to keep it from oxidizing on the surface, Castile soap is very good, we will proceed by putting a slight coating of the soap (or any substance that will prevent oxidization) over the part of the instrument to be hardened, heat to a *bright cherry-red* temperature, and plunge instantly into cold water, which should be very near to the flame, so that the temperature may not be reduced before it is suddenly cooled in the liquid. Equal parts of water and muriatic acid may be used as a cooling liquid with very good results, making the steel tenacious. If it has been sufficiently hardened by this process, the coating will have left the instrument quite clean and of a silvery appearance, and will also resist the action of a file. The instrument is now too hard for use, and will have to be drawn to the required temper. Polish again upon the buff wheel with rouge before you proceed to draw the temper, that the *temper colors* may be distinctly seen. Care should be taken not to break them while polishing, as they are very brittle. Having ready the cooling liquid and a small spirit-lamp, place the shaft of the instrument of which the temper is to be drawn in the flame of the spirit-lamp, about one inch and a half from the blade for a small excavator, and about an inch if a large one, when the following colors will be seen to run from the flame to the edge of the instrument in succession, viz. : 1. A faint yellow. 2. A pale straw color. 3. A full yellow. 4. A brown yellow. 5. A brown with purple spots. 6. A purple. 7. A bright blue. 8. A full blue. 9. A dark blue verging on black, after which the approach to ignition supersedes all these colors. Each of these successive shades or colors indicate or correspond to successive degrees of softening or tempering. When the first shade (the faint yellow) approaches the edge of the blade, plunge it immediately into the cooling liquid, which should be as near the flame as possible to prevent the temper being drawn too much while the instrument is passing from the flame to the bath. Some difficulty will be experienced in tempering small instruments, and to prevent the temper from being too much drawn upon the edge, place the cold steel handle of another excavator upon the edge while in the flame. Another way to prevent this is to place the blade upon the end of a flat piece of steel or iron, upon which is a drop of water, and when the temper color approaches the edge shove the blade into the drop of water before it is plunged into the bath. This first color (a faint yellow) as a general rule, will do very well for excavators which cut dentine, but for enamel excavators it requires to be harder in the temper. For enamel chisels and hatchets the color should not be drawn down to the edge. A very good way to temper these enamel cutters (suggested by a professional brother some years since) is to place upon the edge of the blade a drop of water, and then place it in the flame as before, and when the heat has become sufficient to completely evaporate the drop of water upon the edge, plunge it into the bath; this is to be repeated three times, when the temper will be sufficiently drawn for use. As there is some difference in steel, the above described shades or colors may not always answer; in such cases experience will teach what is required. If too soft, the shade will have to be kept back from the edge; if too hard, it will have to be brought down to the edge or as near to it as the case requires. The precise shade or color cannot be determined, but as a general rule for the temper of enamel cutters and excavators, shades varying from the silver-gray steel to the fourth (4) color, namely, a brown yellow. After the instrument is tempered, the colors may be allowed to remain, or may be taken off with the rouge buff; this, however, is a matter of fancy.

When heating the instruments, turn the edge of the blade away from the flame so that it may not be overheated and rendered useless. Always apply the heat to the shaft and let it run down to the blade; this will obviate all difficulty.

SEPARATING TEETH.

BY J. D. WINGATE.

This question has, on the filing side, been pretty freely discussed. Will the editors and readers of the Dental Cosmos pardon a few remarks on wedging?

Nature has thrown around the tooth a protection called enamel, which is the hardest and most impervious part of it, and were it perfectly closed on every part of the crown of the tooth, decay would be almost impossible But, generally, there are weak points, which absorb more or less moisture; this decomposing, in turn, decomposes or disintegrates the structure of the enamel, and, finally, finds its way to the dentine, which generally goes much more rapidly; occasionally—to the sorrow of the patient—the whole inside is gone before decay is perceptible on the outside portion of the tooth.

The enamel should, if not too thin and brittle around the edges of the cavity, be preserved, especially where caries is rather superficial. It is seldom that the free use of the file improves the shape of the tooth much.

Many persons have a decided aversion to the harrowing effects of the file, and are willing to undergo a considerable amount of trouble and expense to avoid that "awful sensation" produced on them, by filing their teeth. It has been asserted to me, with a shudder, that after being subjected to operations on the teeth, the patient has nightly, while sleeping, during a week, undergone that same operation, over and over again. Should we not "treat a patient as a human being?" Is it not reasonable that we should look about for some method to avoid, as much as possible, the use of the file? Wedging may be used in very many cases, which may be done with narrow tape, soft pine wood, cotton packed in the cavities between the teeth, etc., as circumstances require. Doubtless, every dentist has, to some extent, used each of these. Direct rules for wedging teeth in unhealthy mouths cannot well be given. In such cases, the operator must depend on his judgment and experience. Sometimes the wedge must be renewed several times in as many days, before sufficient space can be had. There is danger of periosteal inflammation setting in when wedging is done too rapidly, or to too great an extent. But when it is done cautiously and properly, not the least injury will result from it.

Filling teeth, at best, is a difficult operation, as the operator is obliged to depend on his skill in causing each particle of gold in the cavity to hold in place its neighbor, and the neighbor, in turn, hold it in place, while every part of the cavity must be packed so full and well as to prevent any moisture to penetrate it. Without free access to that cavity it is impossible to insert a reliable filling. Suppose we have a cavity in a thick tooth, the cavity so well shielded by another thick tooth, which is not unfrequently the case, where the finest instrument, no matter at what angle it is bent, can only, with the greatest difficulty, be made to enter it. To file for space would be a great sacrifice, but no loss is sustained by wedging.

However, where filing between molars or bicuspids is called for, the V-shaped cut, with the wider side outward, is preferable, when cleanliness is an object. Filing should be done with a clean file, well brushed every time it is used before drying, so as not to be "besmeared with the blood of fifty patients."

Bellefonte, Jan. 12, 1861.

A CONTRIBUTION TO THE PHYSIOLOGY OF DENTINE, AND PERHAPS OF THE CRUSTA PETROSA.

BY WILLIAM A. PEASE.

The title of this article is not definite; but that it is as definite as it can be made, under the circumstances, will appear in the sequel. About one year ago, one of my superior central incisor teeth was plugged. As a result of that operation, the next day the tooth became slightly sore; there was some irritability of the gum, and tenderness over the apex of the root, which ultimated in an abscess. From that time to the present, at intervals varying from two to four weeks, a pustule has arisen on the gum, which a little pressure with the finger would open and evacuate, when the place would heal over, until it was again opened, on a reaccumulation of the pus. At such times, the tooth was not sore, elongated, or loose in the socket, and at no time was there a fistula established over the end of the root; the discharge never being more than a small drop, about the size of a partridge-shot. It should be borne in mind that the nerve died from mechanical irritation, and not from an escharotic or any medicinal application; the nerve canal was unopened. About three weeks since I caught a cold, and there was a slight irritability of the tooth and a little uneasiness in the socket, scarcely amounting to an ache; but there was a greater tendency to acute periostitis than there had been since the time the tooth was plugged. Up to this time, I had let nature take her course, hoping, from the growing infrequency of the accumulations that had to be evacuated, that the disease would spontaneously cease; but I now determined to open the nerve canal through the palatine suture, heal up the ulcer, and have the tooth plugged. This was soon accomplished, when I found the canal nearly dry, empty, and free from odor; a broach passed up into it, armed with cotton, was removed nearly dry and unstained. Finally I passed a fine broach through the foramen, and after exhausting the canal with my tongue, I succeeded in establishing a little discharge, as manifested by the taste. Still experimenting with a broach, I found a portion of the wall of the canal was quite sensitive to the touch; it hurt considerably—much more than was agreeable. This was unexpected; although I had found one case before where the entire canal was very sensitive, and I had frequently noticed that patients flinched, when probing the nerve canal; but at such times, I supposed the broach passed through the foramen. After satisfying myself of the fact, and measuring the extent of the sensitive part on the broach, I resolved to defer any treatment or the application of any remedies to the canal, until the local disturbance disappeared, in order to determine whether the sensitiveness of the bone was constant, or due to the present local irritation. Consequently the hole was stopped with cotton, to be removed from time to time, and always after meals, so long as the investigation was continued. The irritation of the gum soon subsided, and the tooth became as well as the adjoining teeth, except at times there was a slight discharge through the opening in the tooth, as evidenced by the taste and the effect it produced on the whole mucous membrane of the mouth and fauces. Thus, from day to day, I probed the canal with a broach, just long enough to pass through the foramen; so that by sliding it along on the wall of the canal I could tell exactly the length of the sensitive portion, by noting on the broach the place where I first felt pain, and then sliding it along again, till it reached the foramen, through which it passed with difficulty. After many measurements, scattered through three weeks' time, and varied in every way I could devise to insure accuracy, I found that the tender portion was not quite three-eighths of an inch in length. During the whole of this time, the sensitiveness was constant, neither diminished nor increased by exposure to the juices of the mouth or to the air. Whether the whole canal was sensitive at the time the nerve died, and it has gradually subsided during the past year, and the sensitiveness of the remaining portion would disappear in time, is a matter of speculation. If it does not disappear after the treatment I am about to commence, I shall have some fear that the plug will cause irritation. Although I had a case, several years since, in which the whole canal was very sensitive, and it remained so several weeks, in spite of all the sedatives I could use. I got out of patience, and plugged the tooth, and it has given no trouble since. That the major part of this sensitive tract is dentine, I am persuaded by the fact that the probe passes smoothly along over it; but near the foramen there seems to be an obstruction, a rise, or projection from the wall, against which it catches a little, but finally slides over it, and passes through the foramen. This projection may be only an abrupt contraction of the canal near the foramen, or it may be caused by the cementum dipping down into the canal. I am inclined to think that it is the latter, as it seemed to be rougher and more uneven, and I fancy there is a little different sensation when the instrument reaches it, from what there was before. Whether this is an exceptional case, or all would be so, under the same circumstances, I am unable to say. Perhaps the reason we have never noticed the like before lies in the general use of arsenic.

P.S.—Since writing the above, it occurred to me that a few lines, stating the condition of the nerve canal, after treatment, might not be inappropriate.

The opening into the canal was made with a small drill, and it was not enlarged until I was ready to treat the tooth. I then threw a jet of water into the canal with a syringe, to wash out the chips and other impurities; afterward, I used an instrument shaped like a hoe, to remove any adhering matter and to cut away softened bone. I then found that part of the canal which was not sensitive to the touch of the delicate broach, had a sub-acute sensibility when touched with the stronger nerve instrument. The canal was treated in the usual manner, with the exception that I made one application of the tinc. iodine. Under this treatment, the sensitiveness gradually disappeared, so that now it is confined to that portion which may be the crusta petrosa; and there it is sub-acute. From this case, the one mentioned above in connection with it, and other collateral evidence, I think it is fair to infer that there is a communication through the wall of the dentine from the pulp to the periosteum.

LITTLE THINGS.

BY J. S. LATIMER, D.D.S.

Tooth Powder.—One of the best dentifrices I have ever employed is made as follows:—

Pulv. Peruvian Bark	2	pounds.
Prep. Chalk	5	"
Pulv. Orris Root	3	"
" White Sugar	4	"
" Os Sepia	3	"
" Cinnamon	3	"
" Gum Myrrh	½	"
Castile Soap	2½	"
Oil of Wintergreen	1	ounce.

The first two ingredients should be mixed and ground under the spatula. The oil of wintergreen may then be thoroughly mixed with about a pound of the cinnamon, after which the two mixtures may be united with all the other ingredients.

Hill's Stopping.—Some three months since it was my privilege to examine a filling of this material, which had been inserted over an exposed pulp, between ten and eleven years before. It was in the labial surface of an inferior bicuspid, and was still protecting the tooth.

Small Lamp.—It is often convenient to have a small spirit-lamp on the instrument-case or table, for the purpose of warming water for the syringe, annealing foil, etc.

Blow-Pipes.—In using the ordinary blow-pipe much annoyance is often occasioned by the accumulation of saliva in the pipe. This result of the condensation of vapor may be in part avoided by passing the pipe through the flame just before using.

Sensitive Dentine.—A case in which exposure of dentine in an inferior molar, by mechanical abrasion, was followed by such extreme sensibility as to produce toothache, was relieved by the application of about a twentieth of a grain of arsenious acid applied to the sensitive parts and allowed to remain for three hours, protected by wax. It is sometimes well to report our failures, that others may avoid the rocks on which we split; the following is one of them: The dentine in a small cavity in a central incisor was exceedingly sensitive; used chloride of zinc while excavating, but it did not penetrate much on account of the unusual density of the dentine. After completing the excavation, as an experiment, I applied the escharotic a few minutes previously to filling, hoping thus to permanently obtund the sensibility of a thin lamina next to the gold. The cavity was then syringed and a gold filling introduced. In a day or two the sensibility returned, and was so greatly exalted that the pulp was destroyed in consequence of irritation.

Chambers.—Smooth and neat chambers may be made in vulcanite plates by attaching pieces of tin plate, cut so as to give the requisite shape to the plaster-cast before packing.

Wax Rims, such as are employed in getting the "bite," are better when cut from a thin cake of pure wax, and so manipulated as to avoid breaking up the crystalline structure. If warmed a very little and cut with a hot knife, no difficulty will be experienced in doing this, and the toughness and adhesiveness of the rims made in this way will repay the trouble.

Adhesion of metal to the plate, in swedging, is prevented by interposing tough, thin paper.

DROPSY OF THE ANTRUM.

BY H. A. BEAMER.

In November, 1859, Mr. H., aged forty years, of the thoracio-cephalic temperament, called my attention to a slight enlargement of the left side of the face, immediately over the antrum. Being engaged at the time I did not examine the case; and I saw no more of Mr. H. until February, 1860, at which time I found that the enlargement had very much increased, being about the size of a hen's egg. The only symptoms were a slight tenderness on pressing the enlargement, and occasionally a burning itching sensation in the region of the antrum. The second bicuspid and superior molar of the affected side were decayed to the gums, the fangs remaining firm and tight; these teeth had ached severely some twenty years previous, and had swollen the face until the left eye was closed; since then they had given but little trouble. I removed them and perforated the antrum from the location of the second bicuspid; there was nearly a gill of yellowish water, of a saline taste, immediately discharged; the antrum was washed a few times with tepid water, the enlargement immediately disappeared, and in a few days the patient was well, and has remained so to the present time. In this case the opening from the antrum to the nasal cavity was closed, and the accumulation of water in the antrum distended its walls and produced the enlargement. I have no doubt the teeth referred to had been a source of irritation for twenty long years, and finally produced the disease above mentioned, thus affording another proof of the baneful practice of letting diseased teeth remain in the mouth.

UNION, VA.

SENSITIVE DENTINE.

BY EDWARD N. BAILEY, D.D.S.

A FEW days since a young gentleman called to have his teeth "put in order" before returning to college. After a thorough examination of the mouth, I concluded to separate the bicuspids on either side, as their appearance indicated caries; with a thin file and chisel opened a space sufficiently large to get a view of the surfaces, and discovered three cavities about one-third the size of the whole plane, but in attempting to excavate found them to be so highly sensitive as to cause a violent start and exclamation of pain; at no point could they bear the stroke of the sharpest instrument; applied creosote, to remain twenty-four hours, and then filled two other cavities.

The next day tried again to remove the decay, but at first with no better success, the pain being so intense as to start the tears. Having to leave the city that night there was no time to lose. Saturated cotton with chloride of zinc, deliquesed by the atmosphere, and filled the cavities with it; allowed it to remain five or six minutes, then thought I would cut a little and renew it, when to my pleasurable surprise I fully prepared the cavities with very little or no pain, and filled them without further trouble.

A few days afterward similarly treated for a young man a case of superficial caries, on the lateral approximal surface of the right superior frontal incisor; too shallow to fill without considerable cutting, and so sensitive as to make it impossible for him to sit still, jumping and shrinking at the slightest touch. Applied chloride of zinc, and then pointed an instrument adapted to the case; immediately commenced cutting, and fully prepared the cavity without any more pain; filled it and dismissed him much pleased with the operation, as he had previously experienced great pain in having others filled.

The rapidity and completeness with which the chloride of zinc acted in these cases surprised me, for after repeated applications it has failed in some teeth, exerting but little influence.

An excellent mode (the origin of which is due to a higher authority) is to saturate cotton with chloride of zinc and press out the excess beyond moisture, then steep it in pure creosote before applying it, more especially to deep-seated cavities, thus preventing the violent shock of pain which generally accompanies its use; allow this to remain a day and renew it if requisite.

Why it acts so differently in a variety of cases of apparently the same nature, I am not prepared to say, but it is highly probable the action is more prompt in the less dense structures of dentine.

There is no apparent effect, however, produced by it on the enamel, as a tooth kept in a strong solution of the chloride for over a year by a "*professional father*" much interested in the "use and abuse" of this valuable escharotic, presented no visible change on its removal, the enamel being as bright and perfect as when it was first immersed.

PHILADELPHIA, Jan. 8, 1861.

HOW TO PREVENT THE SPRINGING OF PLATES.

BY G. S. MILLS.

I GIVE this as a simple method and a sure one; an experience of five years is my proof. I do not know what it is to spring plates since I have followed the method which I give below. I take a strip of tin about an inch wide, and make a hoop large enough to encircle the case to be soldered, and have a space of three-fourths of an inch all around it, then place the case inside the hoop on the table, with the points of the teeth resting on the table; I then mix with water, plaster of Paris one part, of common sand (fine) two parts; mix thin enough to pour into the hoop and flow all around the teeth, build up the plaster and sand on the top of the plate some three-fourths of an inch; as soon as the mass gets hard enough, trim off the superfluous portions. After preparing the case to be heated, put it under a low heat until it is dry, then increase the heat from twenty to forty minutes, according to the size of the case; after this put the whole into a charcoal fire, and heat till the plate is brought to a bright cherry red; then put the whole into your soldering-pan with live coals, and put the blow-pipe on and solder; cool gradually. After removing the mass, try your case on the model and you will find it all right.

SOUTH FRAMINGHAM, MASS.

HARE-LIP AND CONGENITAL FISSURE OF THE SUPERIOR MAXILLA AND PALATE BONES.

BY GEORGE B. FUNDENBERG, M.D.

THE numerous operations for the cure of the above-mentioned deformities, which we see recorded in the dental and medical journals of this country and of Europe, prove that the proper method of procedure is yet but partially understood by many of those who attempt it. The mere closure of the lip, no matter how neatly done, is not all nor half that is required in these cases. The union of the maxillæ and the approximation of the palate bones are essential parts of the operation. My object in this article is to draw attention to the importance of preliminary treatment, which, I am convinced, is too often neglected in these distressing cases.

The late Dr. Hullihen, of Wheeling, in a pamphlet published in 1844, insisted upon the propriety of first bringing together the bony fissure, and gave a description of his plan for this purpose, than which nothing can be more simple and effectual. It does not appear, however, to have attracted the notice of the profession—at least, it has had little effect upon its practice.

The method proposed by Dr. H. consisted in the application of adhesive straps shaped so as to cover each cheek and extend across the lip beneath the nose, and drawn together by ligatures, being daily tightened until the sides of the fissure are brought into contact. Dr. H. did not propose to unite the jaw, but merely bring its sides into contact; but in a conversation I had with him subsequently, he spoke of the possibility of uniting the jaw in the same manner as the lip, viz., by the first intention. Whether he afterward performed the operation I do not know; but since then I have performed the operation a number of times, and have been much gratified with the results; whereas, in former operations in which the lip alone was united, the neatest union was only a partial success, for the widened and depressed nose, the breadth of the face, the projecting alveoli, and the stretched and pinched appearance of the lip, invariably formed grave defects in every case. In this enumeration of the advantages of this method let us not forget the approximation of the palate bones, thereby facilitating the future operation of staphyloraphy, or if this should not be resorted to, at least improving in a measure the voice and deglutition of the patient.

I will briefly as possible describe my plan of procedure. As the bones of an infant at birth are soft and flexible, the earlier the case is attended to the sooner will the fissure be closed. As soon, therefore, as the surgeon is called to such a case, he will begin the treatment by the application of the isinglass plaster, so shaped as to cover the entire surface of both cheeks, and doubled and brought forward over the lip beneath the nose. The ends of the plaster extending across the lip should not be wider than half an inch, and should be strengthened by several layers of plaster so that the ligatures will not cut out. An assistant now, with the palms of his hands, presses both cheeks strongly forward while the surgeon passes a ligature through the ends of the straps and ties them together. A small portion of the end of each strap, where it crosses the fissure, should be cut off daily or every other day, as may be required, and tied again. The plaster need not be renewed oftener than every six or eight days. Infants with such an apparatus will be enabled to take the breast, the straps forming a good substitute for the upper lip.

As soon as the edges of the fissure approach within the sixteenth of an inch of each other, the case is ready for the operation. In the great majority of cases, however, one side of the jaw projects more than the other; and in such cases as soon as one side *overlaps*, the surgeon will proceed to operate, and with a common scalpel pare off the edges of the cleft, and pass one strong ligature through each side of the jaw, one-third of an inch from the edge of the fissure; then, wrapping the jaws of a common straight-tooth forceps with a silk handkerchief, he will lay hold of the projecting end of the jaw, and bend it down as nearly as possible on a line with the depressed end; I say *bend* it, for it will not break, and there is nothing to fear in so doing; and I say as far as possible, for it cannot be brought down altogether. This done, an assistant pressing the jaw together with all his might, the surgeon will draw the ligature as tightly as possible and tie it. Adhesive straps should now be applied upon the cheeks as before. The ligature may be left in for eight or ten days, and there will be union of the jaw, broader or narrower, according to circumstances, but strong enough to hold it firmly together. The operation for hare-lip can now be performed at any subsequent period, with much advantage and with much less risk of failure, as there is no chasm across which to stretch the lip, and no projecting end of the jaw.

The time required to bring the sides of a fissure together varies, of course, with the age of the patient. In a very deformed case with unusual breadth of fissure upon which I operated several years ago, the jaw was not ready for the operation until the end of the fourth week, although I applied the straps on the second day after birth. In a more favorable case two weeks was only required. Dr. Hullihen mentions a case in which the child being nine months old, eight weeks were necessary. At how late a period a cleft can be closed by the above method, I do not know, having heretofore made no attempt upon a patient over three months. I shall, however, shortly make trial of the case of a boy four years old, and may report the result.

CUMBERLAND, MD., Feb., 1861.

PROCEEDINGS OF DENTAL SOCIETIES.

PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

REPORTED BY GEO. T. BARKER, D.D.S.

A STATED meeting of the Association was held on the evening of February 5th, 1861, at eight o'clock.

President, Dr. Dillingham, in the Chair. Present, Drs. Buckingham, McQuillen, Peirce, Suesserott, and Barker.

The minutes of previous meetings were read and approved.

The Committee on Library reported that they had purchased the following books, which had been placed in the library, viz:—

Snow on Anæsthetics.
Gray's Anatomy, Descriptive and Surgical.
Tome's Dental Surgery.
Richardson on the Teeth.
Leidy's Human Anatomy.
Richardson's Mechanical Dentistry.
Taft's Operative Dentistry.
Dalton's Treatise on Human Physiology.
Todd and Bowman's Physiological Anatomy.
Paget's Lectures on Surgical Pathology. 2 vols.
London Dental Review. 2 vols.
Dental Register of the West. 2 vols.
Dental Cosmos. 2 vols.

Signed, { J. H. McQUILLEN,
GEO. T. BARKER.

On motion, the report was accepted, the committee being continued.

Dr. McQuillen presented to the Association several volumes of the London Lancet.

A vote of thanks was tendered to that gentleman.

On motion, adjourned.

A MONTHLY meeting of the Association was held on the evening of February 12th, 1861, at eight o'clock.

Vice-President, Dr. Buckingham, in the Chair. Present, Drs. Suesserott, Peirce, Flagg, McQuillen, Garretson, Fitch, and Barker.

The subject for discussion being

"THE SYSTEMIC CAUSES INTERFERING WITH THE PERFECT DEVELOPMENT OF THE TEETH,"

was opened by Dr. Suesserott, who said, starting out with a full appreciation of the entire dependence of all the solid constituents of the animal organism, together with the fluids contained and secreted within it, upon a perfectly normal condition of the blood, we have no difficulty in tracing the remote causes of all the diseases with which our ever-changing bodies are afflicted, namely, faulty *nutrition* and *elimination.*

The molecular death that is constantly at work in preparing for removal the elements that are no longer subservient to the economy renders the introduction into the system of new particles necessary. If by any means the powers of digestion have been weakened, the very ingesta which should have gone toward the rebuilding of broken-down tissues will become irritating and destructive agents, favoring, instead of preventing, decomposition.

The mutual relationship which exists between all of the organs and tissues, through the agency of the powerful yet delicate chain of sympathetic nerves, causes any deviation from a healthy condition in one, to be speedily felt in others, and, perhaps, remote ones. It will scarcely therefore be necessary to make the assertion that we have *many* systemic causes interfering with the proper development of the teeth. As we are assembled here for mutual benefit and instruction, it may be well to direct attention to some of the causes which we, as dentists, should be able, at least to some extent, to combat. Permit me in the first place to refer to the unpardonable carelessness on the part of mothers in regard to the preservation of their own teeth, as a prolific cause of imperfect development, not only of the teeth, but also of the entire osseous system of their offspring. Without a good foundation, it is worse than folly to attempt to erect a good superstructure, and without a perfect organism to commence with, all the hygienic rules that can be laid down, and the most assiduous care on the part of dental and medical advisers will be of no avail.

The long train of exanthematous diseases with which the majority of children are affected, act as so many prolific causes in weakening some part of the organism, and thus at once interrupt that beautiful harmony which the God of nature intended should govern all his works. The law of elective affinity having been confounded, the organs and tissues which were fortunately in an advanced state of development prior to the inception of the disease continue to have particle after particle added to them; while others, which we might almost consider as just emerging from their chaotic condition, are robbed of their supply, and in their great struggle for existence sometimes take a direction and growth entirely foreign to that intended. Once confused, elements which, under other circumstances, would have been appropriated to the perfection of a harmonious whole, war with each other; their abnormal presence interfering with the healthy action of neighboring parts, the delicate monitors which come off from and return to the great cerebro-spinal system of nerves, give information of trouble, a demand is made upon the entire economy, and if a perfectly healthy condition is ever after established, it is only through the active agency of that *biotic* force, with the intimate nature of which we are as yet ignorant.

If a weakness has been induced in the system, either before or after the commencement of dentition, the most careful treatment will often fail to direct to the dental organs the elements which their proper development demands; and their maintenance after their entire growth is nearly always seriously interfered with.

A perfect nutrition being so essential to the perfection of the economy, we can, without any fear of error, look upon any deviation from a normal course in that direction as a prolific cause of disease, and conscious of the fact that the development of the teeth, unlike almost all other organs and tissues, as far as their solid constituents are concerned, takes place after birth, may we not hope that the investigations of the members of our profession may lead to results of the most important character? The teeth, like all other parts of the economy, are intended for use; if therefore the child is brought up on food, it matters not how nutritious in character, that requires no effort on the part of the masticatory organs for its comminution, the expansion of the alveolar arch, from want of pressure on the natural wedges, the teeth, is prevented, and the afflux of nutrient material to the bones and teeth fails to be invited, because of the absence of that irritation which is the natural result of the full performance of a function. It has been noticed in those countries where children are brought up, and adults live, on coarse food—the bread often requiring the assistance of a hammer or ax for its reduction to pieces small enough to take into the mouth—that a contracted maxillary arch is of so rare occurrence as to excite the astonishment of all beholders, and caries of the teeth is so seldom met with, that dentists are a class of individuals never heard of.

Dr. Fitch remarked that all diseases of the teeth may be traced back to either constitutional or local influences. The primary cause of disease may, in every instance, be considered as external to the organism. These various causes impress the teeth through different mediums.

The systemic influences are those agents which act through the organism, poisoning the fluids; thus inducing functional disturbances, they lave every tissue of the body through the blood and select particular structures for the manifestation of their peculiar pernicious and destructive tendencies; and every disease to which the teeth are subject may spring either directly or indirectly from this source. This class of causes is called constitutional, in contradistinction to those acting externally upon the teeth. The first interfere with and vitiate the plastic materials that go to form the future teeth, etc.; while the latter, either by mechanical or chemical processes, act upon the teeth locally, rapidly disintegrating their structure which may have been previously prepared by systemic influences, for this rapid work of death. These two causes are so intimately blended, that it becomes a matter exceedingly difficult to determine which is the primary cause of disease. It, therefore, many times, becomes a question of no little perplexity to the dental practitioner, to diagnose correctly the source of those active agencies which destroy the teeth. He was inclined to believe that all the systemic causes which produce tooth disease arise either from poisons introduced into the organism, or from those physiological disturbances, dispositions, or diatheses, which predispose to certain diseases in preference to others. These dispositions or affections of body may have been inherited, or contracted, as they often are by a continued violation of the physical and physiological laws. We have two classes of poisons which act injuriously upon the teeth, the inorganic and organic. Of the many belonging to the former class, we will mention the following: mercury, lead, arsenic, antimony, phosphorus, and the caustic alkalies. All these poisons act primarily upon the blood, defibrinating it and rendering it poor and thin; predisposing certain structures to effusions, hæmorrhages, inflammation and suppuration, and other structures to exostosis, caries, and necrosis. The structures most implicated are the glandular, fibrous, osseous, and dental. They, many times, produce great general debility and marasmus. He would direct particular attention to mercury, as this substance presents many points of interest to the dentist. Whenever this poison is taken into the system either through the skin by absorption, or the stomach, or is inhaled by the lungs, if continued sufficiently long, it alike manifests its peculiar characteristics upon the structures of the oral cavity; passing, as it does, into the blood, it bathes every structure of the body, and leaves its particular impress on those of vascular and fibrous growth; hence the oral glands, gums, and periosteum are early and protractedly affected by this pernicious agent. It seems to seek an elimination through the glands of the mouth.

Mercury, perhaps, more than any other inorganic poison, disposes the dental periosteum to inflammation; it continues through subsequent years, by insidious processes, its work of destruction upon the gums, alveolus, and teeth—the last of which eventually drop from the jaw, necrosed and carious. Whenever this poison is medicinally exhibited in early infancy, its pernicious influence upon the plastic material forming tooth-bone is distinctly seen in the rapid disintegration of tooth structure in contrast with contiguous teeth formed either prior, or subsequent, to the exhibition of this poison. Considered it a question of some moment, how far the teeth may be affected by mercurial poison through the periosteum and pulp, and would ask why may it not act upon cementum and dentine, as well as upon the osseous tissues? Its action, of course, graduated by their position in the respective scales of vitality; also may not exostosis be due, in some measure, to its presence?

The alkalies, if used considerably or in excess, exhibit similar effects to those induced by mercury. They produce sponginess of the gums, a loosening of the teeth, and their ultimate separation from the arch. The famous Dr. Huxham relates an instance, that a gentleman of fortune acquired the habit of eating carbonate of ammonia, to a wonderful extent. The consequence was, that in the language of that gentleman, "he brought on a hectic fever, profuse hæmorrhages from the nose, intestines, and gums; while every one of his teeth dropped out, and he could eat nothing solid." This man wasted in flesh, his muscles became soft and flabby; pustules appeared over his entire body; and he finally died greatly emaciated, some months after ceasing to use the ammonia.

Among the organic poisons, we may include the syphilitic, the eruptive diseases of children, small-pox, measles, etc., and the poisons of yellow and typhus fevers. It may be said of all these poisons, they possess the innate power of reproduction and transmission. But would confine his remarks mainly to the syphilitic; and in reference to this it may be said, that it is the most formidable and insinuating. If present in the infantile system, its virulence is especially exhibited upon the dental apparatus, in the development of small, dark, grooves or pits—this conformation of the tooth being eminently disposed to caries and early death. Exfoliation of the teeth is frequently met with in adult life, as the secondary effects of this virus. It acts in fœtal, as well as in adult life, and it becomes an interesting point of inquiry to the dentist, to ascertain how far it affects the tooth substance through the dental pulps. It evidently produces general atrophy, which leads to sloughing of the soft parts, the necrosis of bone, and caries of teeth.

By many it is thought that the eruptive diseases of children and the malignant fevers have very little, if any, injurious effects upon the teeth. The deplorable condition of teeth following these diseases may be due more to the course of treatment adopted than to the disease. One point is clear in reference to our duty, that the investigation of the specific results of these poisons upon the organs of mastication and adjacent parts should receive that attention which their importance demands. There is another class of poisons, acting upon portions of the teeth, concerning which very little is known, called malarious; they are found to pervade certain localities, and produce their results by contact, having no power of transmission; in many instances persons living in such localities are the subjects of intense toothache. If these poisons do not interfere directly with the teeth proper, they certainly do interfere with the soft structures of the teeth, and render their presence in the mouth a question of tolerance; for many a sound tooth has paid the forfeiture of this interference, from the supposition that the cause of suffering originated in the tooth itself, when the true cause was the systemic influence operating upon the nerve fibres entering the dental canal.

The functional disturbances or conditions of body, called diatheses, which affect the teeth, are the dyspeptic, gouty, rheumatic, and, perhaps, the strumous. These conditions of body, especially when acted upon by remedial agents, have a very marked effect upon the alveolus, gums, and teeth; but in what way they exert their injurious influences, is not so clearly understood. Whether they are the cause or sequence in many local manifestations of disease, becomes a matter somewhat involved in doubt. Dyspepsia, when once fully established, is the prolific source of many disorders, and no doubt plays its part in establishing those diseases peculiar to the teeth and other contiguous parts. The blood, impoverished by imperfect digestion, and not supplying proper aliment to any structure of the body, must ever act directly upon the teeth, and upon those normal organic functions on which are suspended, in so important a sense, the health and all the positive forces of the organism; dyspepsia is direct and reflex in its results, and must ever remain a source of much mischief to the dental apparatus. The gouty diathesis seems to be intimately connected with, if not produced directly by, the dyspeptic; they appear to sustain the relations of parent and child. In the gouty affection, we have the difficulty transmitted through nerve fibre, and its focal power displayed in the peripheral nerve fibrilla; hence persons disposed to the gout often suffer excruciating tooth pain in the absence of any apparent local cause whatever. Under these circumstances, a solution of the difficulty as to its cause should be sought rather in functional than in local influences; and also suspicion should be aroused in reference to the presence of any of the poisons, especially the organic, as extraction under these circumstances will not afford relief.

The hæmorrhagic diathesis is a disposition of body tending to effusion; indeed, alarming depletions sometimes occur from the slightest causes. The plastic material of the blood or fibrin appears to be wanting, or, if present in sufficient quantities, seems to be imperfectly distributed through this fluid; the blood does not coagulate when exposed to the air, but remains thin and watery. This condition may arise either from anæmia, the inorganic poisons, mercury, the caustic alkalies, or from some forms of fever. In scurvy we frequently have hæmorrhages, and persons with this diathesis present a highly spongy condition of gum, and often the membrane lining the sockets of the teeth is found much diseased if not entirely destroyed. If this diathesis prevails during infancy, it should indicate to the dental practitioner that he may expect a defective dental organism; and at the same time should suggest the means to be employed in combating the causes, which are purely systemic.

Dr. Flagg regarded the subject under discussion as possessed of great interest both theoretically and practically, and one which should demand thoughtful preparation upon the part of gentlemen who proposed speaking upon it, inasmuch as it was, to a certain extent, foreign to the pathway of their daily thinkings, and in a degree abstruse. He felt fully the utter impossibility of touching, even most cursorily, the points of the subject as a whole by each individual member, and would, therefore, for his quota, speak to but a single consideration. His observations had led him to the conclusion that, for practical utility, the systemic influences affecting the development of the teeth during infancy and childhood might be divided into two great classes: first, those morbid conditions which are classified as exanthematous diseases; and second, those predispositions which entail such diatheses as the scrofulous or the scorbutic; or again, children of parents who are decidedly cachectic. The former of these influences he considered affected the *enamel*, and the latter the *dentine*, or tooth substance—the former making their sign upon the tooth as they did upon the system, viz., externally; the latter acting likewise systemically, affecting that portion of the tooth analogous to the parenchyma of other organs. He thought that observation would constantly sustain this position; and indeed so clearly as to enable the operator to state, in connection with the former, almost precisely the period of the occurrence of such diseases as measles, scarlatina, etc.; while a knowledge of the condition liable to exist as concomitant with the latter would lead him to search most assiduously for carefully concealed decay, and warn the patient of its probable magnitude, in case it should be found. Thought that while those diseases which affected the enamel were apparently the most deplorable, as being detrimental to the beauty of the teeth, the morbid conditions which seemed so baneful to the dentinal structure were in reality productive of the most lamentable results; for, while we constantly see teeth disfigured almost to hideousness, proving their durability even to old age, we as constantly see those teeth which, though presenting a fine exterior, are possessed of faulty tissue, disintegrating and crumbling away, leaving the mouth full of unsightly and half-buried fangs. He desired other gentlemen to observe in this direction, with the view to corroborate or disprove his position.

Dr. McQuillen remarked, there are two conditions absolutely essential to the *growth* and *nutrition* of every organ of the body: 1. A proper condition of the part to be nourished, enabling it to appropriate materials that may be brought in contact with it. 2. A due supply of the materials essential to nutrition. If either of these two conditions are wanting, arrested *growth*, defective nutrition, or disease supervenes. In the language of holy writ, "good seed thrown into good soil shall bring forth some thirty, some sixty, and some an hundredfold." All of those present were familiar with the fact that good wheat thrown into a soil rich in the materials demanded for the development of the life-germ will yield an abundant harvest; whereas, had it been cast on poor soil, or *bad* seed cast on a rich soil, the yield in each case would have been correspondingly indifferent. That which was true of the vegetable kingdom also holds good in the human economy. If the various organs of the body, for instance, are primarily defective in structure, how can they be expected to properly appropriate materials sent to them in that life-giving current, the blood? or, on the other hand, if the materials are not present in the blood, how can the nutrition of a part be effected?

The dental organs, particularly in the early stages of their growth, are as much influenced by these laws as any other organs of the body. And it is by properly directed and systematic attention to the nutritive function alone that any radical improvement can be expressed. Of late, the hypophosphate of lime and other calcareous remedies have been strongly recommended for the purpose of supplying the system with materials for the more perfect development of the bones and teeth. That these agents are valuable in certain conditions of the system, no one would for a moment question. But it is a matter of far greater moment to pay due attention to the *quality* and *quantity* of the food, particularly in childhood, when the diet should be as *simple* and *nutritious* as possible. He had reason to believe that the *flour* from which our *white* bread is made is deprived of a large proportion of the materials essential to the nutrition of the bones and teeth, by the excessive bolting to which it is subjected.

Reference had been made, by one of the preceding gentlemen, to the fact that when a decayed tooth is found on one side of the mouth, in the majority of cases the corresponding tooth on the opposite side will be similarly affected. This subject (*symmetrical disease*) has not only attracted the attention of dental but also of general pathologists, and is not only interesting in a physiological point of view, but also of *vast practical importance* to the dental practitioner, assisting him in forming his diagnosis when making an examination of the teeth; for, formed as the teeth are, in pairs, it is not at all surprising that, if one tooth is defectively formed, its fellow of the opposite side should correspond with it in structure. Bearing this in remembrance, the dentist should invariably, when called upon to treat a decayed tooth, subject the corresponding one to the most rigid examination before pronouncing it free from caries. The phenomena presented by symmetrical diseases in any part of the economy are unquestionably due to the fact that the influences which modify nutrition on one side of the body will at the same time control the opposite side. A very remarkable illustration of this is mentioned by Paget in his Surgical Pathology, in which a lion's pelvis, deposited in the Hunterian Museum, London, presents, with a daguerreotype exactness, on each side the same complex and irregular osseous deposits, the product of a disease similar to rheumatism.

Dr. Buckingham said, he doubted not a fruitful cause of the imperfect development of the teeth was due to unsuitable marriages on the part of the parents. It was a well-known fact among stock raisers that to obtain a well-developed animal both parents must be perfectly sound; the same will hold good with mankind; and if this was not observed, the offspring would of necessity be unhealthy. He referred to the importance of good nourishing food, but thought with many children, the elements of nutrition failed to be appropriated, there being a deficiency in the vital forces, and supposed that when the system was diseased all the tissues of the body were more or less affected, and that on a subsequent return to health other organs might throw off the disease, while the teeth, from their low state of vitality, would be unable to recover. Spoke of the analogy existing between the nutrition of the vegetable and the animal. He alluded to the difference in the teeth of Irish servants upon their first arrival and after they had remained here a short time, as many who had perfect teeth on first coming into the country would lose them after remaining here a few years; he would ask to what this change was due, and admitted he was not at present able to determine.

Dr. Flagg having had some experience in regard to the effect produced upon the teeth of the Irish emigrants to this country, was inclined to doubt the existence of rapid decay as the result of constitutional changes, and rather attributed it to the presence of local causes, in the combined neglect of the proper cleansing of the teeth and mouth, and the presence of food more liable to decomposition than that to which they had formerly been accustomed. Stated that while he had, upon questioning, failed to find one who did not use the tooth-brush at all, they invariably acknowledged that it was reserved for occasions from one to three months apart. Referred to the stringiness of the fluids of the mouth as an apparent constitutional effect, but considered that, with proper attention to cleanliness, and the free use of local antacids and detergents, he had invariably succeeded in removing this condition and retarding, in a most marked degree, the progress of decay. Referred to three cases which he had selected some three years since, for the purpose of experiment, in which the condition under consideration had pronounced itself, and resulted in the presentation of one or two teeth for extraction and three or four cavities for filling in each mouth. Directed the daily brushing in two cases, and the tri-daily brushing in one case, with the free use of prepared chalk daily; had introduced but five fillings for the three patients during the three years, and all the work had remained perfect. He recommended the use of *Creta Prep.* in some extreme cases, as often as three times daily, until a decided effect upon the buccal fluids was produced, announced in the removal of viscidity, and then continued daily or *pro re nata.* Also observed other than merely local beneficial results accruing from this practice, in that patients had spoken of improved general health, better powers of digestion, etc. etc., and was disposed to attribute this to the fact of the discontinuance of constantly pouring into the stomach vitiated saliva and absolutely putrescent animal and vegetable matter.

Dr. McQuillen, referring to the classification of the various articles of diet under two heads—first, the *nitrogenous* or the *nutritive;* second, the *non-nitrogenous* or the *calorifacent,* remarked that under the first head are ranged all kinds of meat, the cereals, and many of the other vegetables, containing, in addition to other elements, carbon, hydrogen, oxygen, and nitrogen, and supplying the economy with the pabulum from which the tissues are originally built up, and the wear and tear of use are repaired. The second class, embracing the fats, oils, sacchariheous matters, alcohols, etc., and composed of three elements only, (carbon, hydrogen, and oxygen,) are concerned in maintaining the temperature of the body at a certain point.

He suggested that the potato properly belonging to the first class, is eminently nutritious, and is to the Irish what wheat is to the rest of mankind—"the staff of life." It is a mistaken notion, however, to suppose that they live upon that vegetable alone, for experiments on the lower animals and observation of human beings have demonstrated conclusively that one article of diet is insufficient to maintain health and life for any length of time. The diet of these people, it is true, is plain and simple, but it comprises, as a whole, that variety which is demanded for the development and maintenance of vigorous organisms. They afford, however, a striking illustration of the correctness of the assertion, that although the human economy, if confined from early childhood upward to an almost exclusively vegetable or animal diet, may maintain excellent health from infancy to a green old age; any very decided change of diet under such circumstances is generally followed by the development of scorbutic and other affections.

Thus it is with them on reaching this country; their diet is suddenly changed from a plain and simple one (almost exclusively vegetable and easy of digestion) to a heterogeneous mass composed of animal and vegetable food to which their stomachs have not been accustomed, and along with this, probably adopting the customs of the country of bolting their food in place of masticating it thoroughly, their stomachs are overtaxed, and dyspepsia and its concomitant evil *perverted nutrition* being induced, it was not at all surprising that the affections already alluded to should manifest themselves, or the dental organs originally perfect in their structure should fall as they do, easy and rapid victims to decay.

The discussion was also participated in by Drs. Peirce and Barker, and several interesting cases in practice were referred to by different gentlemen.

The subject of

"THE NEW PLASTIC MATERIALS FOR FILLING TEETH"

was chosen for next discussion.

DENTAL COMMENCEMENT.

BY GEO. T. BARKER, D.D.S.

THE Annual Commencement of the Pennsylvania College of Dental Surgery was held on the evening of February 28th, 1861, at Musical Fund Hall, in the presence of a large and enthusiastic audience.

The exercises consisted of music by the Germania Orchestra, prayer, conferring of degrees, and the valedictory.

The degree of "Doctor of Dental Surgery" was conferred upon the following named gentlemen by Henry C. Carey, Esq., President of the Board of Trustees:—

Names.	Residence.	Subject of Thesis.
Hy. Breslauer, M.D.	Germany.	Causes of Periosteal Inflammation.
Carter Day	N. C.	Operative Dentistry.
A. J. Douds	Ohio.	Salivary Fluids.
G. H. DuBois	N. Y.	Diseases of the Antrum.
Jas. Goodwillie	Ohio.	Manufacture of Porcelain Teeth.
Frederick Garke	Geo.	Causes of Irregularity of the Teeth.
Francis Hickman	Pa.	Filling Teeth.
J. E. Hernandez, Jr.	Cuba.	Mechanical Dentistry.
Jno. Hallowell	N. J.	Methods of Applying Artificial Teeth.
S. H. Harvey	Ark.	Anatomy and Physiology of the Fifth Pair of Nerves.
Wm. O. Jones	N. C.	Caries.
Edgar T. Longstreth	Pa.	Irregularity of the Teeth.
Wilbur F. Litch	Pa.	Scurvy.
J. S. Latimer	N. Y.	Preservation of the Natural Teeth.
C. E. Latimer	Geo.	Impressions of the Mouth.
G. W. Lawrence	Mass.	Mechanical Dentistry.
J. E. McCarty	Pa.	Human Teeth.
J. A. Martin	Pa.	Extracting Teeth.
W. G. Morrison	Pa.	Anæsthesia.
T. Marshall, Jr.	Va.	Dental Mechanism.
E. A. Mayor	Switzerland.	Effects of Diseased Teeth.
P. D. Olivier	La.	Caries of the Teeth.
Ricardo Morary	Cuba.	Continuous Gum Work.
C. J. Peacock	England.	Pathology and Therapeutics in their Relations to the Teeth.
H. Y. Pickering	Pa.	Treatment of Caries.
S. N. Porter	N. H.	Porcelain Block Teeth.
H. H. Read	Vermont.	Causes of Decay.

Name.	Residence.	Subject of Thesis.
T. C. Stellwagen	Pa.	Circulation.
G. A. Sinclair	Pa.	Anæsthesia.
G. W. Shattuck	Vermont.	Extracting Teeth.
T. S. Stevens	New Jersey.	Dental Surgery.
J. S. Trout	Pa.	Anæsthesia.
Jno. B. Wood	Pa.	Relation of the Teeth to the General System.
W. G. Williston	Pa.	Deciduous Teeth.
Wm. E. Wells	New York.	Diseases of the Pulp.
Andrew G. Webber	New York.	Sponge Gold and its Use.

The valedictory was then delivered by Professor Wm. Calvert, and was listened to with marked attention. We present below a synopsis of his address, regretting that time and space prevent its presentation entire.

After referring in appropriate language to the ties which had existed as pupil and instructor between them, and which were then to be severed, he said: You have drank from the fountain of truth and science to which humble instrumentalities have led you, and now you are about to go forth, as is man's lot, amid the vicissitudes and activities of life to labor. You have interests allied with both genius and science, heightened by the weight of responsibility to your race; you should have motives high toned and true, inspiring you with elevated and lofty aspirations, ardor and earnestness in the improvement of the talents that have been given you, inciting you to zeal and emulation for the strife and the conquest. Hopeful desires, earnest regards, kind wishes, faithful and fraternal friendships from your *Alma Mater* seek repose in you. In your out-going it is not with that knowledge too often acquired from theories alone, even of the most approved, nor indeed wholly obtained from the observation of labor and skill in others. This is all well, indeed important or indispensable, I might say; but experience in some things is far better than theory, and of more worth than many treatises or manifold illustrations. Experience or practice in each department of our profession has been your privilege, as a legitimate part of our instructions; and not only have you witnessed in the hands of others the various operations and manipulations, but as well have you performed them, and repeated the same until a degree of proficiency has been attained by you which none but the facilities of collegiate instruction could adequately supply. While the highest tone of your professional duties may be dispensing benefactions to your fellows, in administering relief to the afflicted, in preventing and arresting disease, there is, moreover, an implied condition of attendant inconvenience and discomfort, if not the absolute infliction of pain; then, let not your sense of suffering or fellow feeling for others be cold, insensible, or callous, but ever dispose the current of your ingenuous, humane, and beneficent natures to those whose call demands your aid and skill, that you may not swell the tide of human woe, but rather that you may calm the turbid stream, and sweeten the embittered cup of the ills of humanity.

A just sense of the faithful performance of every duty admits of no plea for infidelity, and from the very nature of your duties fidelity becomes the keystone in the arch that will give stability and solidity to your every achievement. Confidence on the one part should ever inspire faithfulness on the other; then to be steadfast in every duty, true to every trust, and ever faithful to the commendation of your *Alma Mater* here publicly ratified. It should be your highest professional prerogative in your intercourse with patients and with the world, to have your standard of excellence bear an elevated tone, and let all your acts comport with that refinement and dignity of character that belongs alone to the true man and gentleman. In life's relations, either business or social, there is scarce anything to be regarded more worthy of imitation than that of cultivated and refined taste indicated in polished manners, so that in your intercourse, if there is a genial, complaisant, and commanding deportment, it will not fail to redound both to your praise and profit. So act that your life may truly be a combination of integrity, intelligence, erudition, and skill, purified in the great alembic of truth, accompanied with gentlemanly deportment, suavity of manners, and polished, beautified, and perfected with the brilliancy of unalloyed rectitude. In dental surgery, the importance of regular and systematic study, of theoretical and practical instruction as afforded in well-regulated colleges, cannot be over-estimated, and is no longer a matter of doubt or disputation.

Private tuition, moreover, is recommended and recognized by all as an important if not essential preparation for the more thorough collegiate course. It may become your duty to assume the office and responsibility of such preceptorship; and in imparting to others a knowledge of the truths and principles of our science and art, fail not, whenever it is your privilege, to reward genius or merit with a prompt and judicious commendation. Infused with such a spirit, carry it out into your whole course through life, for many a genius has had the fountain of effort chilled, and many a generous impulse has been paralyzed for want of genial influences. I think I can, in a measure at least, form a proper estimate of the aspirations of genius, with her fountain of native truth, and element of intuitive power and trust, that I can fully appreciate what should be her merited reward. Quite sure I am that instead of lending encouragement, strengthening effort, and giving credence to every achievement, the too common and practical policy of the present day is to underrate ability and praiseworthy effort, or to withhold the inciting word of merited praise and commendation.

Since the earth and the world were formed, activity and labor, or, in the more general phraseology, *work*, seems to have been the great motor force of the universe; for whether with outstretched vision we strive to measure the vastness, sublimity, and beauty of the wondrous systems of the universe, to investigate and comprehend their controlling forces and governing laws, or whether we look upon the elements in their tranquillity, or more majestic fury, or at eventide, or at the early dawn, we witness nature's panorama adorned with Heaven's imagery, we fail not to discern the Divine impress and seal of His handiwork. Throughout the created universe there seems wholly a revoking of the idea of inactivity or repose. Nothing within the grasp of finite comprehension is at rest; all matter is not only undergoing the mutations of time, but is ever moving by some inappreciable, insensible, and infinite force. This earth of ours moves through space at the enormous rate of 68,000 miles per hour, and it would seem as though from its centrifugal force it would fling from its surface into empty space the vast ranges and towering mountain heights, menacing the overthrow of man's proudest and most illustrious architectural achievements, as if to level with the plane of a perfect sphere the entire face of the fair planet; and yet it is not thus; the mountains and the valleys, peerless heights and deep caverns, poise and counterpoise, and thus accomplish their work; the rivers dash madly on in their winding courses, restlessly active, as if seeking refuge and repose from their labor and turmoil in the bounding heart of the Mother of Waters.

Man, in the fire of his intellect and half-frenzied zeal for ambition, plies mightily the oar by which he hopes to stem the eddies of life and reach the open sea of unbounded success, and as by the strength of his arm he wields the shaft in its dip and feather, he is borne onward, so by the bounding strength of mind and giant heart he is impelled to work. The field upon which you have entered is an ample one, although drawing a conclusion from the surface thought this may not seem so, still with the more extended and rational aspect your profession assumes a legitimate alliance with almost all science. As light and heat unceasingly and resistlessly emanate from their great centre and source, so the mind's coherency of element, of concentration, and of power should shine forth to lighten the unexplored passes and half-illuminated avenues of science, and send a ray, though but of reflection, to penetrate the vistas of the deep and the obscure. Nature's vast, yea, illimitable laboratory still invites to work, combinations of elements are still to be extended and multiplied, and science has yet her infinitude of problems for man's solution. Advancing science is but the key to move the deeply-enveloped springs that open the portals of recluse nature; and as the unfolding of the bud in the springtime, so is advancing science in the development and perfection of nature's own laws; it is but the penetrating or fathoming, step by step, the wonder workings of the great infinite mind. Science has become, and is more and more becoming, the indispensable auxiliary even in the every-day walks and vocations of life; it is the mechanic's rule and foundation stone, the mathematician's line and angle of correction, the artist's pencil guide, the professional man's text-book, the philosopher's gravitating force, the orator's rhetoric, the mariner's beacon light and point of observation, and the astronomer's lens to fathom the deep azure and penetrate the vista of infinite space. And will not you, members of a scientific profession, be participants in this illustrious and glorious manifestation of light and truth? The attainments of life are reached only by assiduous and laborious effort—the moving impulse of ambitious nature both stimulates and impels to zealous exertion in the struggle for eminence. Capacity increases with active exercise, and desire enlarges as capacity expands.

In the material world the field that is well tilled increases in its natural productions, and the vine to which the knife has been well applied in the pruning brings forth its more luxuriant clusters. If, then, you would reach to high attainments, be unwearied in industry, and unremitting in your labors, and go not in the way of the courtly profanations of a perverted manhood, neither smile upon the archer whose drawn bow and well-poised arrow of deadly point may perchance find in you a victim. Spurn the vampire of idleness, the fiend of selfishness, or a self-complacent contentment; entertain no ulterior motives, or resort to petty policy in order to secure lucrative ends. Indulge not in disparaging remarks, significant innuendoes, sarcastic invectives, or anathemas, against your friends, neighbors, or fellows, and more especially those allied to you professionally. Avoid sectional feuds of whatever kind or character, and not only those things that are in themselves open and outright transgressions, but even the "very appearance of evil." If you do not, expectation may perish, hope may be vanquished, and, alas! when too late, you may discover

"The Upas hath a poisonous shade, and who would slumber there?"

He closed his address with the following quotation:—

"If, then, you're
Ever level and ever true
To the toil and the task you have to do,
You'll sail securely, and safely reach
The Fortunate Isles, on whose shining beach
The sights you'll see and the sounds you'll hear
Will be those of joy, and not of fear."

His remarks were warmly applauded.

The demonstrators' reports we append in full, indicating as they do an increased usefulness and prosperity in both the college and clinics.

OPERATIVE DEPARTMENT.

567 *patients for whom the following operations were performed.*

Gold Fillings	720
Tin Fillings	360
Temporary Fillings	14
Amalgam Fillings	2
Treatment and Filling of Pulp Cavities	176
Superficial Caries removed	18
Extraction of Teeth and Roots	3129

Removal of Salivary Concretions	80
Pivot Teeth inserted	8
Treatment of Inflammation of the Gums	18
" of Alveolar Abscess	37
Surgical Treatment for Irregularities	39
Total	4601

D. H. GOODWILLIE, Demonstrator.

MECHANICAL DEPARTMENT.

Whole Sets of Teeth	14
Upper Sets	62
Whole Upper Sets, Block	4
Partial Sets of Single Teeth	79
Irregularity Plates	2
Whole number of Teeth mounted	2037

J. J. GRIFFITH, Demonstrator.

The exercises closed with the performance of the National airs by the orchestra, which elicited from the audience the most enthusiastic applause.

In conclusion we take pleasure in stating that the attendance upon the school this session has been much increased over any previous one, the matriculants numbering in all 63.

EDITORIAL.

A DAY'S EXPERIENCE.

It is astonishing to observe the number of cases of toothache which occur by the change of the weather. We referred to this subject some time since, under the head of Epidemic Toothache. Sometimes there will more cases occur in a single day than in one or two weeks at other times. We are governed very much in the time of plugging teeth which are under treatment by the run of cases which are not under treatment; for instance, if we have a number of teeth ready to plug, and the weather changes, and many cases of pain come in, we defer plugging them until the run of toothache cases are over, and avail ourselves of more favorable weather for operating, when the patient can possibly wait. All teeth, even though slightly decayed, are extremely sensitive to changes of the weather, but much more when the nerve is exposed or dead; and the correct practice is to operate on them when they are in the most comfortable condition. To plug a tooth to prevent pain, as some suppose, is absurd. Preparing a dead tooth and plugging it at once, or at one sitting of the patient, is in itself, in most cases, sufficient to rouse up irritation and pain, in the same way as filing and drilling too much excites pain and soreness in a root preparatory to setting a pivot tooth. We regard it as very strange that so little attention is paid to this in operating on teeth, now that so large a portion of the profession is supposed to possess a fair knowledge of physiology and pathology. Though the tooth may, as far as the operation and patient are concerned, be insensible to the cut of the instrument at the time, the socket, which is lined by sensitive and living, though morbid membrane, is not: and while it may not give evidence of suffering at the time, irritation and pain follow, simply because it cannot recover, in its morbid condition, from the shock of an undue amount of labor to which it has been exposed. But to our day's experience—we will refer to the 23d of January, 1861. The first case was a young lady of highly nervous temperament, about twenty-three years of age. She came rushing to the office, exclaiming, "Oh, doctor! see me as soon as you can; I have been suffering all night with the most awful toothache I ever had in my life; I really thought I should go distracted." We examined the case, found it to be the right inferior wisdom tooth; we extracted it at once. The roots were not fully formed. This tooth had its pulp exposed for some time, but was the first attack of pain. The second case was a gentleman of about sixty years of age, fine temperament, had not been under a dentist's hands for sixteen years. We found him walking up and down the entry, perfectly wild with pain. He said he had been suffering all night on the left side of his face, but most on the lower jaw. We found the cause to be from the wearing down of the left inferior second molar. By scraping a little on the tooth, over the anterior portion of the pulp cavity, which seemed to be the thinnest, we opened into the pulp, which had slightly receded from the wall of the cavity. There was no discharge of blood or fluid of any kind that we could observe. We put a very small portion of cotton saturated with the arsenious paste into it, and requested the patient to return next day. He accordingly returned, but had no more pain. We removed the cotton, and were enabled to open the orifice a little more, renewed the paste, and on his return the second time, removed the pulp as far down the roots as possible, and in a week plugged the pulp cavity; since which we have not heard of the case. After he was informed that the case was finished, he remarked, on leaving the office, "Is that all that is to be done? Why, I have not had the slightest pain since I first saw you. This is very strange; I thought I should have suffered much more." Third case: a gentleman of full habit, sanguine temperament; had been suffering all night with the most intense pain in a left superior canine tooth, in which we had destroyed the nerve and plugged the root three years ago, since which time, up to the twenty-second of January, had not given the slightest pain or soreness. We removed the plug from the root, which was followed by a discharge of blood and pus. The tooth was left open, and the patient requested to call in a few days. In three days he called; the pain had subsided in a few minutes; the root was mopped out with water, and a pledget of cotton introduced with creosote, and the patient requested to call in a few days again. When he called, the cotton was not stained with blood or pus, and in the absence of soreness, we proceeded to fill the tooth with gold, as it had been before, and the case has not been heard from. The fourth, fifth, and sixth cases were ladies, about thirty-five years of age, of good temperaments; each was suffering with incipient abscess, precisely like the third case; two had been plugged three years, and one seven. They were all treated like the third case, and successfully; each discharged blood and pus on the removal of the plugs. The seventh case was a gentleman about sixty years of age, and suffering, like the second case, from wearing down of the tooth to the nerve in the right superior canine. It was treated precisely like the second case, except that the pulp filled the cavity when it was opened, so that we had to place a pledget of cotton over the pulp, and secure it there by binding over the end of the tooth a lock of cotton tied with a thread around the neck of the tooth. This was successfully treated. The eighth and last case was a young gentleman about twenty-five years of age. We plugged his tooth, a superior second bicuspid, about eight months before, when the nerve was nearly but not quite exposed. When we removed the plug, we found that the pulp was about as nearly exposed as those cases of inflammation from wearing, the second and sixth cases named above. The case was treated by destroying the nerve as usual. These cases go to show that a tooth whose nerve is exposed, whether dead or not, is liable, at some time or other, with the change of the weather and the condition of the patient, to give rise to pain; and there is no system of treatment yet extant to prevent it, any more than there is to insure a patient from taking cold or suffering with any other malady at such times. A dentist who looks to *permanency* in treatment of such teeth is unmindful of the vicissitudes of the weather, the climate the patients live in, or the change their health undergoes from time to time; and to plug teeth, or place them in such condition that they cannot be handled during an attack of disease, is not doing his duty to his patients or his profession. J. D. W.

ERRATUM.—In the February number of this journal, on page 368, under "General Remarks on Filling Teeth," by G. F. J. COLLUM, D.D.S., *read* G. F. J. COLBURN, D.D.S.

REVIEW OF DENTAL LITERATURE AND ART.

BY J. H. M'QUILLEN, D.D.S.

THE valuable method of making block teeth described below *was presented* to the profession, about seven years ago, through the columns of the *Dental News Letter.*[*] As the plan, however, does not appear to have attracted that attention which it justly merits, we have deemed it advisable, on account of the great practical value of the communication, to republish it.

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[*] Dental News Letter, July, 1854.

There is nothing in mechanical dentistry more difficult to *excel in*, or even to attain to a *respectable* degree of perfection, than the carving of teeth, and a tacit acknowledgment of the correctness of this assertion is made by the vast majority of practitioners when they employ others to do such work for them. The following plan, however, ought to enable those who possess application and a moderate degree of manipulative skill, to produce work satisfactory alike to themselves and patients.

The late and lamented Dr. Walker, Demonstrator of Mechanical Dentistry in the Pennsylvania College of Dental Surgery, who had a great deal of experience with this method, and regarded it with much favor, produced some of the most natural specimens of artificial teeth in this way that we have ever seen.

It has been stated above that the inventor *presented* his plan to the profession; and we would further remark that, when taking into consideration the valuable character of the present thus voluntarily made, the act is not only worthy of commendation by those who may be benefited by it, but also of imitation by those who, year after year, secure patents for the most useless and nonsensical inventions, which they afterward attempt to foist on the profession.

We take pleasure in stating that the course pursued by Dr. Calvert in this matter was appreciated by his fellow-practitioners in Philadelphia; for, without any solicitation on his part, a committee was appointed by the Pennsylvania Association of Surgeon Dentists to inquire into the merits of the method, and the committee not only submitted a favorable report, but also recommended that a gold medal should be awarded to the inventor, which was accordingly done.

"A NEW METHOD OF MAKING BLOCK TEETH. By WILLIAM CALVERT, D.D S.—Permit me, through the medium of your valuable columns, to offer for the consideration of the profession a few brief remarks upon the subject of *block making*, or the manufacture of porcelain block teeth.

"It is not my intention, nor is it my desire, here to treat of the various methods that have from time to time been practiced by those engaged in the manufacture of block teeth. Nor is it my purpose to discuss the *relative merits* of the different methods, or of any one in particular, but my aim shall be to attempt a description of a process of my own that adopted some time ago, and which I have most successfully practiced.

"The first preparatory step to be taken, after having correct articulating models, is to select single teeth so defined as may either suit the taste of the operator or the peculiarity of the case, and supposing the case to be an upper denture, it will be necessary to have *two* front and two lateral incisors, two canine or cuspids, two bicuspids, (or if more convenient the cuspids,) and four molars, all of which should be sufficiently large to compensate for shrinkage, in the material of which the teeth are to be composed.

"The plate upon which the blocks are to be made, and to which they are to be subsequently fitted, being upon its corresponding model, a rim of wax may be placed upon it, and the teeth arranged upon the wax, articulating with the antagonizing model, allowing sufficient in the length of the teeth for shrinkage. Beginning with the front incisors, the teeth should be set to the wax (as above) as far back on each side as the first bicuspids, inclusive; then leaving a space equal to the width of *half a tooth*, the arch may be completed by the addition of the molars, two on each side. The teeth having been thus arranged upon the wax, with reference to regularity or irregularity, height, etc., the desired outline of gum may be filled up with wax.

"Special care is requisite in so trimming the wax where joints are contemplated, that no subsequent alteration will be needed during the further manipulations.

"It will be necessary, previous to making the moulds, to make some provision for replacing them, after they have been once removed, so that they shall occupy the same position as they did previous to their first removal. For this, it will be only necessary to make some conical holes in the face of the cast, say two on each side, between the centre and the first bicuspid teeth, and two opposite the molar teeth of each side. These holes need not be more than about a quarter of an inch deep, and should be but a short distance below the edge or line of the plate. The face of the cast, including said holes, should now be varnished, when the case is ready for making the moulds.

"The first mould to be made should be that including the four incisors, two canine, and two first bicuspids, eight teeth in all. This may be done by simply oiling the face of the teeth, outline of gum, and plaster cast, and pouring plaster of Paris of a proper consistency over the surface of the same, allowing it to fall slightly over the cutting edges, so as to form a more perfect mould. This mould should be divided in the centre, making two sections, which can be done by cutting through the plaster while in the state of hardening; or, what is perhaps better, before applying the plaster, make an incision in the wax outline of gum, in which place a thin slip of sheet-lead, letting it extend a little above the cutting edges of the teeth, and as far down the face of the cast as is desired to extend the mould. When hard, remove from the cast and teeth, and we have the untrimmed mould for said eight teeth. Previous to making the moulds for the back teeth, it is necessary to remove the *first* bicuspids, or the cuspids representing them, from the position they occupied in making the mould just described, and placing them beside the first molars so as to represent the *second* bicuspids. Care is to be taken in removing and replacing them, so that the original form of the wax be preserved, otherwise the end thereby intended to be secured will be defeated, and the joints at these points will be irregular and unsightly.

"For the purpose of rendering clear a point necessarily left somewhat obscure in the foregoing description, it may be well here to state that the space of *half a tooth*, left between the first bicuspids and the first molars, *is* to compensate for shrinkage in the length of the arch, for after the first bicuspids are removed and set adjacent to the first molars, thereby representing the second bicuspids, they occupy the entire vacancy first left and one-half the space formerly occupied by said first bicuspids; hence the extension of the back moulds toward the centre is equivalent to the shrinkage of the entire arch.

"As the foregoing is applicable where the case of fourteen teeth is to be divided into four blocks, as is usual in soldering, I would say that when the intention is to make pin holes for riveting, the space of *half a tooth* must be left between the canine and bicuspids, instead of between the bicuspids and molars.

"The moulds for the back teeth may now be made in the same manner as those of the front ones. After the moulds have been made as already described, they should be so trimmed that in the process of moulding the blocks there would be no liability of removing portions of the enamel off the teeth in withdrawing the moulds. The moulds should now be varnished with some spirit varnish, and after it becomes dry are ready for use.

"The moulds being prepared, the next step is the enameling of the teeth in the moulds. The enamels should be moistened with a little clean water, and having previously oiled the section or sections of the mould, the blue or point enamel may be first applied (as stiff as it will work) with a very small spatula made for the purpose. This enamel should be *thin* at the base, and gradually thickening with the concavity of the mould to the cutting edges of the teeth. The yellow or base enamel is next applied *heavy* at the base, and gradually terminating near the point.

"After the enameling has been completed so far as is designed to be moulded at one time, a small quantity of the body about the consistency of a thick paste may be spread over the surface of the moulds and of the enamels, the moulds replaced upon the model, and the body carefully filled in, at first rather soft, but subsequently harder and harder, until the mould is sufficiently full. Then applying the flame of a spirit-lamp for a few minutes with the blow-pipe, the body will be toughened enough to work well, when the moulds may be removed. The teeth may then be separated and trimmed, the blocks divided as desired, the *gum* enamel applied, etc. etc., and so completed.

"The process of enameling and moulding being precisely the same with all the blocks, it needs not that I should go into further detail.

"I have already said, that when the blocks are intended to be riveted upon the plate, the moulds are required to be somewhat different. There is also another difference; that is, the moulding of the pin or rivet holes, which may be done by removing the plate from the model, placing the moulds upon the model, and drilling a small hole upon the prominence of the ridge opposite the centre of each tooth, in which insert a piece of wire of a desired size. The enameling, etc., may then be done as before described, and after the body has been hardened sufficiently, the pins may be removed, leaving the holes neatly moulded, perfectly smooth, and straight. The blocks may then be finished at once, before removing from the cast."

THE DENTIST'S MEMORANDUM; a Book of Engagements and Ready Reference for 1861. By C. H. Cleaveland, M.D. Cincinnati, John T. Toland.

As the title fully indicates, this work was prepared to serve the double purpose of a memorandum book for recording appointments between the dental practitioner and his patients, and as a work of ready reference "on a variety of topics which it is convenient for the dentist to have ready at his command without loss of time or expenditure of the labor that might be required in examining the more elaborate treatises in his library."

Had the diary been so arranged as to enable the operator to perceive, at a glance, what his engagements are for an entire week, it would have been more convenient than in its present form. It will, however, prove quite useful as it is. In the part devoted to "ready reference," there are some valuable suggestions; but in looking over this portion, we think it will be generally conceded that there are many points open to controversy. Want of time and space, however, only admits of our directing attention to the following: "Among the various anæsthetics in use, experience has proved that chloroform is the pleasantest, most convenient of administration, *and as safe as any.*"

In opposition to this last remark, we have the decided testimony of Drs. Snow and Richardson, of England, and Prof. Dalton, of this country, with regard to the fatality attendant upon their experiments with chloroform on the lower animals; and in addition, we have the carefully prepared and well authenticated statement on the part of Dr. Kid, that there have been more than 100 fatal cases accompanying its administration in minor operations on man. With such an array of facts, how can it be said to be "as safe as any" anæsthetic?

DENTAL REGISTER OF THE WEST—FEBRUARY.

"MEETING OF THE MISSISSIPPI VALLEY ASSOCIATION.—The regular annual meeting of this association will take place on Wednesday, February 20th, at ten o'clock, A.M. We hope there will be a full meeting. It always gives us much pleasure to meet with the members of this association. We are always anxious to enjoy its meetings, and always sad at the time of its adjournment.

"It is the oldest dental association in the world; other associations came into existence, became superannuated and died, or fulfilled their mission, and passed out of existence. The Mississippi Valley Association differs from all such, in this, that it is never weary nor exhausted in doing good work, and it does not become superannuated, for it works more vigorously now than ever before; it seems to be constantly renewing its age, and gathering strength for the accomplishment of new purposes. We anticipate a very full meeting of the working men of the profession. T."

With no disposition to detract one iota from the meed of praise justly due to the above association, on the contrary, willing to coincide heartily with all that the writer might have said of the innumerable advantages derived by its members from the annual meetings, and the beneficial influence it has exerted over the profession, we must still beg leave to enter a protest (at least for one association) against the fell swoop with which he consigns all other organizations to Hades.

We freely admit as an unquestionable fact, that the Mississippi Valley Association *is the oldest* dental society in the world, having been organized August 13, 1844.* In this respect, however, she only has the advantage of being one year older than the Pennsylvania Association of Surgeon Dentists, which was organized December 15, 1845.† Since the date of organization, the first, owing to its members being scattered over a large extent of country, has merely held annual meetings, while the latter, during the earlier years of its existence, invariably held four stated meetings annually, and within the last eight years these have been increased by the addition of regular monthly meetings for discussion, which are well attended, the quarterly meetings being reserved for the transaction of business alone.

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* American Journal of Dental Science, old series, vol. v. p. 112.

† Ibid, vol. vi. p. 208.

We do not feel disposed, on this occasion, to indulge in eulogistic expressions of the past and present, or in fond anticipations of the future promise of the association, but would suggest that it cannot as yet be truly said that it "became superannuated and died, or fulfilled its mission and passed out of existence."

DENTAL REGISTER OF THE WEST—FEBRUARY.

"REMARKS ON THE NATURE OF THE CHANGES WHICH OCCUR AFTER THE EXTRACTION OF THE NATURAL TEETH, AND THE PROPRIETY OF THE EARLY INTRODUCTION OF ARTIFICIAL SUBSTITUTES. (A paper read before the Cincinnati Dental Association, Nov., 1860.) BY PROF. J. RICHARDSON. In a brief period after the extraction of the teeth, inflammation of a higher or lower grade is established, accompanied with some degree of tumefaction and tenderness in the parts implicated. If the inflammation is moderate in degree, and is permitted to run its usual course, it will be entirely consistent, in its ultimate consequences, with the requirements of the economy. If immoderate in degree and long continued, the natural processes or actions in the parts, determining the various changes which take place, will be more or less diverted or embarrassed.

"The immediate issue or product of the inflammation which occurs is fibrinous exudation from the ruptured surfaces of the periosteum of the socket, which, in its incipient stage of organization, takes the form of granules. In from ten days to two weeks the socket is partially or entirely occupied with this fleshy substance. During this period, the actions are directed almost wholly to *reparation*. Absorption does not, ordinarily, occur until the inflammation has in a great measure subsided, and hence, at first, there is enlargement or tumefaction of the gums, rather than waste by absorption. As the inflammation subsides, however, these parts, which have no longer any special functions to perform, as the more protuberant portions of the alveoli and adherent gum, begin gradually to waste away under the action of the absorbents. Concurrently with this absorption, there is deposition of osseous material within the socket, through some agency of the granules filling it, so that, in course of time, the cavity is partially filled in with bone analogous in structure with the maxilla proper, of which it ultimately forms a part; while the more superficial portions of the granular formations are transformed into tissues identical with the soft structures immediately surrounding. It is in this manner, by the concurrent and co-operating actions of absorption and deposition, that the maxillary ridges attain ultimately the smooth, regular, and symmetrical form noticeable when the changes are completed.

"In view of the facts just advanced, the inquiry suggests itself, how soon after the extraction of the natural teeth may an artificial appliance be introduced into the mouth consistently with the conditions at first existing, and the integrity of the new formations?

"We are among those who believe that the best interests of the patient require the early introduction of artificial substitutes, in all cases demanding full dentures. By so doing, we are enabled to confer immediate and signal benefits, by preserving, in a great measure, the customary expression of the individual,—promoting easy and distinct enunciation,—assisting in the more perfect comminution of food, and by maintaining unchanged the habitual relation of the jaws. The very general recognition of these important advantages has led to great unanimity of opinion in regard to the propriety and necessity of inserting what are termed *temporary* sets of artificial teeth.

"More recently, the policy of inserting artificial teeth *immediately* after the extraction of the natural organs, is being advocated. Although the practice is seemingly heroic and hazardous, the reasons for its adoption are plausible. It is claimed that the inflamed parts, being shielded by a perfectly-adapted plate, are less subject to injury when munching food than when uncovered, the pressure in the former case being distributed over a larger surface, thereby equalizing the forces applied in mastication. Some good is also doubtless accomplished in these cases by protecting the wounded and inflamed structures from the irritating action of the atmosphere, and from sudden and direct impressions of extreme heat and cold.

"On the other hand, it is held that the pressure of the base upon, and contact with, abraded surfaces already inflamed and sensitive, cannot fail to aggravate existing morbid conditions. If such be the case, the practice may be fairly challenged; for any mode of procedure that would tend to increase the inflammation unavoidably present after the extraction of the teeth, or that would serve to extend it beyond the period of time when it should spontaneously subside, or that would interrupt in any considerable degree the reparative processes going on within the socket is clearly inadmissible. Observation has fully confirmed us in the belief, that active inflammation in the structures about the sockets retards absorption, and delays the completion of those changes which it is important should occur at the earliest period consistent with the natural operations of the economy. We have frequently noticed, as we have no doubt all have who have given the subject attention, that in cases where even moderate inflammation of the parts, either from local or constitutional causes, has continued long after the usual period for its subsidence, that little or no absorption has taken place. As well as we can remember, all of those cases of unusual tardiness where the gums have remained almost wholly unchanged for a period of several weeks together, inflammation of a somewhat intractable character was found present, the gums remaining somewhat turgid, with diffused redness and some tenderness on pressure. Whether the causes operative are systemic or local, the condition manifestly opposes the action of the absorbents, their functions, for the time being, resting apparently in abeyance.

"Our experience does not justify us in expressing a positive opinion as to the propriety or impropriety of inserting a plate at the earliest possible period after the removal of the natural organs. If solicited so to do, we should have no hesitation, after having extracted the teeth, to take the impression during the same sitting, and proceed with the operation at once, although it has been our usual practice to defer it until the more active stages of the inflammation, and the soreness consequent thereon, had in a great measure subsided.

"In all cases where the substitute is applied at an early period, the cavities in the model, corresponding with the sockets of the teeth, should be filled up even with the surface of the ridge, that the plate when swaged may not project into the sockets, and prevent, by mechanical obstruction, the normal development of the granular formations which are essential to the integrity of all the parts, and which cannot be interrupted in any considerable degree without influencing the ultimate form of the jaw. It is in this manner that irregularities on the surface of the ridge are often produced, and not, as is erroneously supposed, by mere *pressure* of the base, the inequalities on the surface of which produce corresponding impressions upon the ridge."

THE VULCANITE—FEBRUARY.

"WHO IS RESPONSIBLE?—We notice in the November number of the DENTAL COSMOS, that the question has been raised by one of the New York dentists, in regard to who is responsible for the failure of an artificial denture,—the 'surgeon' who takes the impressions, fits the plate to the mouth, takes the articulation, and supervises the arrangement of the teeth, etc., or the mechanical workman who simply performs the labor thereafter? The subject is handled by the COSMOS in a manner that would lead one to suppose that it involved a complicity requiring a 'Philadelphia lawyer' to explain. To our mind the question is one of easy solution. Who would be responsible for misfitting plates, in case the 'surgeon' employed a mechanical workman in his own laboratory? Every one must see that the employer, and not the employee, would sustain all losses arising from want of adaptation in every particular, no matter from what cause or causes, or which of them being in the fault. This is the custom, and there is reason why this should be the case. In the first place, all mechanical workmen receive a price for their services which precludes the possibility of their being held responsible for any share of the losses, either by bad debts, or bad 'fits.' Second. Every dentist who manufactures his own mechanical work sometimes fails, and is compelled to reconstruct the work in order to give satisfaction. This has always been the case, and probably always will be, for the following reasons: in working gold work, it matters not how carefully the plate is raised, or how perfectly adapted, the plate may change in soldering so as to defeat success. In manipulating continuous gum work, every one knows that the great difficulty heretofore experienced in this really beautiful system is, the liability to changes in the plate by the contraction of the silicious compound, in the high degree of heat required in baking. Some forms of plates are much more liable to change than others, but all are liable to change, from causes beyond the control of the most experienced and successful workman.

"Those engaged exclusively in laboratory work for the profession have generally advertised that they are only responsible for the mechanical execution of the work, and not for its adaptation to the mouth. This is as far as any sensible man would, under any circumstances, become responsible. The mechanical dentist who works from impressions or models, can have no idea of the requirements of an artificial denture adapted in any particular to the wants of the patients. Models from wax impressions, with various alterations and allowances made, are often presented to him; his business is to get up the plates from the models, and the 'surgeon's' business in such cases is to fit it to the mouth. This done, and the articulation taken, with ordinary care and experience on the part of the mechanical dentist, the responsibility must necessarily rest with the 'surgeon.' The relationship existing between the 'surgeon' and the mechanic undergoes no change by the former sending his model into an adjoining building, or having the same work done in his own office by the same workman. It requires no 'code of dental ethics' to settle self-evident truth. If the 'surgeon' has confidence in those he employs, he must take the responsibility; if he has not, he must either do the work himself, or find some one in whom he has confidence, and then take the responsibility; we can see no other way. It is true, if culpable neglect or gross carelessness on the part of the mechanic should render his work useless, he clearly is bound to make it good; but in unavoidable circumstances in which no human foresight could prevent the consequences, and which would be liable to occur under the 'surgeon's' own manipulation, he alone must sustain the loss. Reason: The mechanical dentist charges twenty dollars for a full denture from the impression, for a continuous gum case. After paying for platina, fine gold, teeth, furnace expenses, rent, etc., he will have five or six dollars for his labor; now if he is to be held responsible for any misfitting of the work after its completion, every such case would involve him in positive loss. With the 'surgeon' the case is different: he charges fifty or sixty dollars, and frequently more, for the case which originally costs him but twenty dollars, and can well afford to sustain the expense incident upon occasionally making over the work, and still have something left as compensation for the time spent in taking the impressions, articulations, etc. In making gold work, the usual charge, exclusive of material, is seventy-five cents per tooth, paid the mechanical dentist; this would be ten dollars and fifty cents for making the dies, raising the plate, making the articulating models, grinding the teeth, soldering, polishing, etc. The price demanded in either of the above cases is barely sufficient to compensate for *doing the work once*, and the cases in which those engaged in the dental laboratory business have succeeded in making anything more than a scant living are very rare. The idea that the 'surgeon's' time is more valuable than that of those engaged in the mechanical department of our profession, has no force, for if the surgeon could not get his mechanical work done in these places, he would have to do it himself, or give up that part of his practice. If he chooses to do the work himself, his time while thus employed would be worth no more to him than the services of any mechanical workman, and in many cases not so much. The dentist who devotes his time exclusively to either branch, is more successful than when divided between the two, and consequently less liable to failure from causes that constant experience would enable him to overcome. As the time is fast approaching in our large cities when these branches must necessarily become separate and distinct departments, it is well that this question of responsibility should be satisfactorily adjudicated, and we do not see on what other grounds it can be settled, except the one above indicated; for one of two things is certain, that a much larger price will be demanded by the mechanical dentist if he takes upon himself additional responsibilities so as to enable him to meet the contingencies, or he will refuse to do the work for the 'surgeon,' in which case in all probability he would 'set up' for himself, charge double his former prices, and furnish the work to the public at half the price charged by the 'surgeon.'"

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEO. J. ZIEGLER, M.D.

Conclusion of a Lecture on Dentition and its Derangements, by A. Jacobi, M.D., Professor of Infantile Pathology and Therapeutics in the New York Medical College.

"It is not at all desirable that deciduous teeth should fall out prematurely, or be removed, for the jaw thereby contracts and undergoes a certain degree of atrophy, and consequently, when the permanent teeth appear there is not sufficient room. Besides, the permanent teeth are larger than the deciduous teeth, and (as usually happens after the latter have fallen out or been extracted) they too appear before the normal period; the jaw, then, not being sufficiently expanded, they are either out of the normal position, and are arranged in an irregular manner, or they are forced to form two rows. This anomaly cannot be remedied, because, as Canton justly observes, considerable changes take place in the form of the lower jaw-bone as the child advances in years. The angle formed by the ascending portion, or ramus, is at birth very obtuse, insomuch that under the age of four years it is impossible that the bone can be dislocated. The jaw enlarges or increases in size at the posterior part, not near the chin, in order that the additional molar teeth which the child acquires at the second dentition may find space, without disturbing or interfering with the teeth which correspond with those of the temporary set. This growth of the jaw continues up to the adult period of life, when all the permanent teeth have made their appearance. The ramus is then nearly vertical with the body of the maxilla, and forms a right angle with it. When in old age all the teeth have been lost, and the alveolar arch is closed by the absorption of the partitions of the sockets, the jaw again changes somewhat in shape, and is, apparently at least, thrown forward. In some cases another occurrence will take place. The deciduous teeth may be firmly inclosed in the jaw and not give way to the onward pressure of the permanent set, which thereby are forced to change their direction, and protrude either in front of or behind the deciduous teeth. As in these cases the jaws are fully developed to their proper size, it is not only not injurious, but absolutely necessary to remove the deciduous teeth in order to let the permanent set assume their normal position. A second variation is in the position of the teeth, and instead of one row normally developed otherwise, there are two or more. Columbus reports that one of his children had three rows of teeth. Valerius Maximus and Pliny relate similar facts. A son of Mithridates is said to have had two, and Hercules three. Arnold has met with a child of fourteen years having seventy-two teeth, thirty-six being contained in each jaw, and placed in two rows in a very regular manner, with the exception of the incisors, which exhibited some deviation. Baumés gives two similar cases, but in both the children were unhealthy, with feeble constitutions and a scorbutic condition of their gums. Storch reports a case from an old collection of medical facts and essays; and Lanzoni gives instances of two rows in a new-born infant; in a citizen of Ferrara; and lastly, in Louis XIII.

King of France, who is said also to have had three rows by some writers who exaggerate the expression of Bartholinus, who reports the case:—'Item duplici vel triplici ordine dentium, qualem in priscibus nonnullis vidi et qualem Ludovicus XIII. Galliarum rex habuit.'

"A third variation is the appearance of teeth at a later period than the normal one. Van Swieten gives the case of a girl whose osseous system was well developed and health perfect, but who had no teeth before the nineteenth month. Rayger relates the case of a girl who got her four temporary canine teeth when thirteen years old; Fauchard, that of a child from five to six years, who had a few incisors only. Brouzet knew a child twelve years old who had but one-half of the normal contingent set of teeth, the alveolar margin having the firmness and solidity of the gums of old age. Dugés has seen the first tooth appear in the eleventh, and Smellie in the twenty-first or twenty-second year. Lanzoni knew a child who had the first tooth and the power of speaking intelligibly in the seventh year. Ashburner reports the case of a very delicate though lively child, with large head, tumid abdomen, and peculiarly small-sized extremities, who cut the first tooth, an upper incisor, at twenty-two months, and remarks that many cases of tardy access of speech and stammering are connected with erroneous development of the teeth. Schoepf Merei, who relates the case of a child who had the first tooth at three months, and eleven at eleven months, has seen a child who had no teeth when several years of age. Maury attended a girl of seven years who had not her first lower incisors, the space being sufficient for three teeth, and the alveolar processes being low and narrow. I have had under observation a boy to the age of two years and ten months, at which time he had not a tooth nor a symptom of approaching dentition. The records of the children's department of the German Dispensary of the City of New York contain a similar instance of a child two years of age. Among the four hundred observations on dentition reported by Eichmann, there were a few in which the first tooth cut at twenty-two months, and in a case described by Churchill, the first tooth cut at seven years of age.

"A fourth variation, of which there are a very small number of observations, consists in the absence of teeth. Botallus gives the case of a woman of sixty years who never had a tooth. Oudet is of the opinion that the cause of this anomaly must be looked for in an early inflammation and suppuration of the dental germs. Valla reports the case of Pherecrates, and Baumés that of an adult man who never had teeth.

"The fifth anomaly is the absence of a number of teeth, instances of which are also on record. One or two have been mentioned by me. Storch describes the case of his own daughter, who had no canine teeth; Linderer that of a girl fifteen years old, who never had either of the four upper incisors. I have myself known a lady with but two upper incisors.

"Finally, the following anomalies of doubtful character may be mentioned: Plutarch and Valerius Maximus report that Pyrrhus, King of Epirus, and a son of Prusias, King of Bithynia, had only one bone on each jaw, instead of the full contingent set of teeth. And Bernard Jengha was in possession of a skull, in the upper jaw of which (this being the only one found) only three dental masses were contained, the central one corresponding with the incisors and canine teeth, and each of the two exterior ones with five molars. Perhaps, however, these cases belong to the class of those described by Eustache and Sabatier, in which a number or a whole set of teeth were incrusted by a hard stony substance, thus producing the impression of a single dental mass, or a limited number of abnormally developed teeth.

"As a rule, authors assert that teething at a later period interferes less with general health than at a premature period of life. Morbid symptoms in the former cases are stated to be less frequent. But delayed teething seldom stands as an isolated fact, but is an undoubted proof of some morbid condition in nutrition and general development. In the large majority of cases a notable retardation in the eruption of the teeth is but one of the symptoms of derangement and faulty development of the osseous system and the organism in general. The bones of the infant should be developed with the same equability as its other parts. Premature teething, premature walking, and premature ossification of the cranial bones usually coexist; so do protracted teething, retardation of walking, and retardation of the ossification of the cranial bones and fontanels. They are far from being favorable symptoms, and are too frequently the first symptoms of rachitis. Old Heister and Storch were already aware of this fact. To what extent the general health and constitutional vigor correspond with the formation of the teeth and the development of the osseous system is clearly shown by the following inquiries of Merei.

"Of twenty healthy and robust children, the large cranial fontanel was closed in ten at from eleven to thirteen months; in five at thirteen; in two at fourteen; in two at ten; in one at fifteen. In fourteen of these the first teeth cut at from six to eight months; in four at from eight to nine; in two before the sixth month. Consequently there is, in healthy children, an interval of from four to seven months between the cutting of the first incisors and the closure of the fontanel.

"Of eight feeble or sickly, but not rickety children, the large fontanel was closed in six at from eleven to thirteen; in two at from thirteen to fourteen months of age. In seven of these the first incisors cut from four to seven months before the closure of the fontanels; in one the cutting of the first tooth, which took place at thirteen months, was directly succeeded by the closure of the fontanel. Thus it appears that feeble, but not rachitic children differ little in the proportionate time in which the several parts of the anorganic portion of the body are developed, except that the general development is usually a little slower.

"Of eight rickety children, the fontanel in three was closed in the thirteenth month; symptoms of rachitic mollification of the osseous system developed themselves immediately afterward; the incisor teeth came at the regular time; the other ones too late. In three the ossification of the cranial fontanel took place between the sixteenth and nineteenth month, the first tooth having made its appearance at the age of twelve months, the others following in rapid succession. In one the large fontanel was open at nineteen months; the first teeth cut at the regular time, while rachitis was not yet present; but at eighteen months there were but eight teeth present. In one case of severe rachitis, neither the fontanel was closed nor had the eruption of a single tooth taken place at the age of twenty-five months. I have deemed it important thus to consider the anomalies of dentition and the connection of the eruption of teeth with the development of the osseous system, and finally allude, in passing, to its relations to the general health and to the constitution of the patient."—(*American Medical Times.*)

Relation of Dental Organs to Habits of Animals. Dr. D. Hayes Agnew makes the following remarks on this subject in one of his instructive papers on "Anatomy in its Relations to Medicine and Surgery," in the *Med. and Surg. Reporter:* "In a zoological point of view, the dental organs are exceedingly important, determining in a great degree the habits of animals.

"In the graminivorous, those the cusps of which are suited for grinding or crushing will preponderate; in the carnivora, such as from their form will best rend or tear. In man, we have the very best evidence for his omnivorous capabilities in the mechanism of the dental arch; some of the teeth being adapted to cutting, some to tearing, and some for grinding.

"In fish, the teeth are scattered everywhere almost within the mouth, even over the bronchial arches and the tongue, sometimes as thickly-set spines, in others as recurved hooks. Modifications exist in different species, corresponding to the necessities of organization and habits, wonderfully demonstrative of the multiform mechanisms with which the Creator endows the irrational world of beings. The Myxine, one of the very lowest, feeblest, and contemptible of its kind, in consequence of its dental apparatus, becomes a formidable enemy to the largest monsters of the deep. On the palate a solitary fang-like tooth is placed, and on either side of the tongue two firm, deeply-serrated plates are attached. The hook is first thrust into its prey, and then these lingual saws are set in motion, which cut their way into the flesh; another hold is taken by advancing the fang, and the saws follow, until finally the very interior organs of life are reached.

"In the *Cyprinidæ* (carps) there are no teeth in the jaws; but at the base of the skull, upon the basilar bone, a triangular plate is placed, and on each pharyngeal bone several large teeth, which, working against the dental plate, triturate the food before it passes into the digestive cavity.

"Sharks have several rows placed behind each other. With the exception of the anterior one, which is erect, and composed of triangular spikes, the others lie flat. When the first is lost, the next in order rises up to take its place.

"*Reptiles.*—Chelonians possess no teeth. Non-venomous serpents have the upper jaw and palate bones set with four rows of teeth, two along the jaws, and two on the roof of the mouth. These are turned back toward the pharynx. Such (as is generally known) swallow their prey almost whole, and this they are enabled to do by the extensible nature of the connection at the symphysis of the jaws. These teeth, therefore, are intended to prevent the contents of the mouth from receding. In the poisonous snakes, the maxillary teeth are generally wanting, but there is present a terrible apparatus, consisting of poison fangs. Each fang is traversed by a canal, formed by the bending inward of its sides, and communicating with a gland at its root with an arrangement of muscles, some capable of lifting up the fang, and others of compressing the gland in which the virus is secreted, and thrusting the tooth forward so as to inflict the wound.

"*Birds.*—These are destitute of teeth. In their stead, there is provided a muscular sack, (*gizzard,*) which, containing small pebbles, enables them to triturate the food. Such a contrivance would be admirably suited to many Americans, who eat their food with such haste, that one might suppose they intended to chew it after it had reached the stomach.

"*Mammals.*—Such as gnaw, (*Rodentia,*) have the incisors very prominent, of considerable length, and chisel-shaped, supported on intermaxillary bones, as, for example, the squirrel, beaver, etc. In the *Insectivora*, as the mole, (*Talpa,*) or hedge-hog, (*Erinaceus,*) the molars are studded with sharp points. Certain animals, as the *Edentata*, have no front teeth; examples of which may be instanced in the sloth, armadillo, etc. The canine teeth of the wild boar become, from their great size and strength, formidable weapons of defense or attack. Some individuals of the seal tribe, as the *Trichecus rosmarus*, (Walrus,) have these teeth very long and hook-shaped, so that they can drag themselves along upon the shore, when out of the water, by driving them into the earth. The *Narwal* has no teeth along the margins of the jaws; but a single tusk, eight or ten feet in length, on the left side, projects from the intermaxillary bone. A rudimental tooth exists on the opposite side. In certain whales, as the *Balæna mysticetus*, the gums are beset with vast numbers of closely-set teeth. These are not for purposes of mastication, but as the animal subsists largely upon a small mollusc, they serve to strain through the water of the ocean.

"The whalebone furnished by this cetacean is arranged in the form of flat plates, in rows perpendicular to each other, like teeth attached to the gums.

"The simplest form of the dental organs as they exist in many mammals, such as *Porpoises* and many *Cetaceans*, is that of cones without the distinction of classes, and consisting of ivory alone, filled with a nutritive pulp. The large tusks of the elephant are composed entirely of ivory, hence their commercial value."

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"*Cases of Closure of the Mouth. (From the Raccoglitore Medico di Fano.)* Professor Reina has had occasion to observe four cases of a new form of morbid closure of the mouth, due, not to anchylosis of the articulation of the jaw, but to hypertrophic thickening and induration of the membraneous muscular tissues of one or both cheeks. Syphilis, scrofula, or the irregular and violent extraction of a molar tooth, were the causes of this alteration, and the closure led to much difficulty of respiration and speaking, and interposed an obstacle to the introduction of solid food into the mouth, from which resulted the various consequences of insufficient nutrition.

"To remedy this deformity, Professor Reina divided, by means of a bistoury, the hypertrophied tissues, repeating the incisions whenever they became necessary, and incising transversely the mucous membrane, from the angle of the jaw to the commissure of the lips. The buccinator and orbicularis oris were entirely divided; it became necessary, also, more than once to divide the anterior pillar of the velum palati and the glosso-staphylinus muscle, and in such case the operator was, moreover, obliged to relax the corresponding side of the tongue, which adhered to the interior of the gum. The arterial hemorrhage was combated successfully by compression.

"With the help of conical pieces of cork introduced between the teeth, the abduction of the jaws was facilitated, at the same time that an obstacle was interposed to the union of the divided parts. Finally, the diatheses were combated by general treatment, mercurial or iodized, according to the special indications."—(*Dublin Medical Press.*)

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"*Clinical Remarks on Neuralgia.* By E. H. Sieveking, MD., Physician to St. Mary's Hospital.—The term neuralgia is employed to designate a pain primarily traceable to a nerve or to certain sets of nerves; it excludes the sensations, more or less painful, referable to sympathy, and produced, secondarily, by the affections of other tissues or organs. The neuralgiæ affecting the cerebro-spinal nerves are the most definite and precise of all; while those depending upon an affection of the sympathetic are more vague, and generally not limited in locality, as the former are. Neuralgia, like hysteria, is a term liable to great abuse; and it is only when we have eliminated all possible sources of pain from inflammation or organic mischief in other organs, that we are justified in concluding that we have to deal with a genuine case of neuralgia. The danger that would result to a patient by an erroneous diagnosis is only too apparent from the manifestly different treatment to be pursued in the different cases. The pain accompanying renal calculus, for instance, may be confounded with lumbo-sacral neuralgia, and both may be mistaken for lumbago. Deep-seated abdominal cancer may cause no symptom in the first instance but pain, and may thus not be recognized for a long time, until the advancement of the growth upon adjoining organs renders the source of mischief too palpable to be overlooked. Dr. Inman, in a recent work, has shown more pointedly than any other writer, how frequently tendinous or muscular pains simulate inflammation; and how the adoption of antiphlogistic or reducing measures to combat the supposed inflammation is necessarily followed by an aggravation of pains which are essentially due to fatigue of the parts affected only. Scarcely a week passes, without such cases coming under the notice of all medical men who have much to do with female patients, in whom a more delicate muscular system is peculiarly prone to take on such conditions, though men are not exempt from them. These cases are distinct from neuralgic affections, inasmuch as the pain resides in the muscles and their tendinous insertions, and not intrinsically in the nerves. It matters little, however, in point of treatment, if they are regarded as neuralgic, because the remedies most ordinarily employed in the milder cases of neuralgia would be calculated to give relief to muscular and tendon pain as well; and, *vice versa*, the rest, with anodyne and roborant treatment suited to the latter, could rarely be inappropriate in cases of genuine neuralgia. However, with even moderate care, the mistake is not likely to be made.

"The greater sensitiveness of the female would lead us to expect in them a special proneness to neuralgic affections. It does not, however, appear that genuine neuralgia prevails with much greater frequency in the female than in the male sex. I find that of sixty-five cases of undoubted neuralgia, taken in the order in which they have presented themselves to my notice, thirty were males, thirty five females, or in the proportion of forty-six per cent. to fifty-four per cent.—a difference which is scarcely sufficient to justify our attributing a very particular proclivity on the part of the female sex, especially when derived from a comparatively small number of cases. The origin of the affection in the two sexes varies much, as it so frequently depends upon the nature of trade or employment in which the individual is engaged. Thus, in men, saturnine poisoning is a common source of neuralgia, which very rarely affects the other sex; for eight of the former I have only one of the latter, and in that the evidence of the toxic effects of lead was not by any means absolute. On the other hand, laundry-work, with its accompanying catarrhal and rheumatic influences, is necessarily confined in its neuralgic effect to the female sex, in whom the debilitating results of miscarriages, menorrhagia, and other derangements of the sexual system, are also much more frequently productive of the disease in question than sexual disorders of man. Again, we find that the two sexes present characteristic differences in regard to the proclivity of certain nerves and regions of nerves to put on a state of hyperæsthesia; the solar and mesenteric plexuses, and the sympathetic system generally, appear, in the female, peculiarly liable to morbid excitement; gastrodynia and colic belong to the cases of affections which have a predominant tendency to occur in women; while the cerebro-spinal system, as instanced in the case of sciatica, is the part of the nervous system in which the sufferings of man more frequently find their seat. It is by no means meant to be asserted that this distinction is absolute; it is merely found to be a general rule, which is supported by experience no less than by analogy. I may at once state, that one of the severest cases of cœliac and mesenteric neuralgia (unconnected with lead poisoning) which it has fallen to my lot to witness, occurred in a gentleman; while I have no hesitation in stating that I have seen as urgent sciatica in women as I have ever witnessed in men. The following statistical *resumê* of the distribution of the sixty-five cases, specially analyzed with a view to determine the varying proclivity of the two sexes, will show the general correctness of these remarks better than argument:—

Part of nervous system affected.	Total cases.	Females.	Males.
Cerebro-spinal	39	21	18
Sympathetic*	20	13	7
Cerebro-spinal and sympathetic	3	—	3
Doubtful	3	1	2

"If we eliminate from the ten cases in which the sympathetic alone, or the sympathetic concurrently with the cerebro-spinal system were affected in males, and the seven in which there was saturnine poisoning, there remain only three in which an idiopathic affection of this part of the nervous system was met with.

"With regard to the cerebro-spinal system alone, we find what looks like a marked predominance of certain nerves in each of the sexes to put on diseased action; thus sciatica occurred in nine men, while it affected only four women. The branches of the brachial plexus, on the other hand, appear to be more liable to deranged function in women, in whom we find four cases of brachial neuralgia for one occurring in the opposite sex. Neuralgia of the fifth pair, also, if the cases taken for analysis may serve as a criterion, has a special predilection for the female sex, three of whom suffered from this distressing malady; while no no man is to be found, in this series of cases, who was affected by it."—(*Lancet.*)

"*Reproduction of the Left Half of the Lower Maxilla.* By E. S. Cooper, A.M., M,D., Professor of Anatomy and Surgery in the Medical Department of the University of the Pacific, San Francisco, California. *Case.*—A little girl, seven years of age, having been attacked with bilious fever, the medical man in attendance administered largely of calomel, which produced a most severe and protracted ptyalism, resulting in sloughing of the alveoli on both sides of the lower maxilla, as also that of part of the upper. The affection of the lower jaw continuing, necrosis of one-half took place, including the condyloid and coronoid processes. Separation finally occurred near the symphysis, and when I was first called, some seven months after, nature was making an effort throw it off. This was done by the gradual replacing of a hard substance having the external feel of bone, which, as it increased in size and hardness, had evidently slowly pressed the necroid portion of bone out, so that at the time I saw the case first the anterior extremity of the detached bone was so raised as to keep the mouth quite wide open. The necrosed bone was quite movable, and on instituting motion, a considerable quantity of purulent matter was discharged from the soft parts surrounding the bone.

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* This number would have been much larger were the cases of gastrodynia included, but they have been purposely omitted.

"In consequence of the elevated position of the anterior extremity of the dead bone separating the jaws, the patient had been unable to masticate her food for nearly three months. On attempting the removal of the detached bone, not the least difficulty was encountered, nature having already almost accomplished the work. An incision about one inch long was made on the upper side, and the bone readily seized and extracted with the forceps. As soon as the dead bone was removed, the motion of the lower jaw was measurably restored, and on opening and closing the mouth quickly, the motion of the coronoid process under the zygomatic arch could be as distinctly felt as in the natural condition.

"The reproduced bone (as it was evidently nothing else) was much larger than the natural bone, and on the under side very convex. She remained under my treatment for two months, during which time the reproduced bone constantly improved in its shape, which I afterward ascertained continued until nearly all deformity was removed."—(*Amer. Med. Times.*)

Stages of Chloroformization.—The following summary on this subject is from a paper on chloroform, read by Dr. N. Mendenhall, before the Hendricks Co. Ind. Med. Soc., and published as a part of its proceedings in the *Cincinnati Lancet and Observer:* "The action of chloroform on the system has been divided into different degrees or stages. Prof. Wood, in his *Therapeutics and Pharmacology*, gives three stages: 1st. A preliminary stage of slight cerebral confusion. 2d. An anæsthetic condition, or insensibility to painful impressions, which comes on before consciousness and the power of motion are lost. 3d. Deep sleep or coma, with complete muscular relaxation.

"Dr. Snow gives five degrees of its influence: First, all the effects of chloroform, while the patient retains his consciousness of what is going on around him, and where he is; in this degree a tooth may be extracted, and other minor operations performed, while consciousness remains. In the second stage, there is no longer correct consciousness, the mental functions are impaired, but not necessarily suspended. In this degree there is sometimes so complete loss of sensation that the surgeon's knife may be used without pain, especially in children. In the third degree, there are no longer any voluntary emotions, and the patient is incapable of any perception or consciousness of pain. In the fourth degree, the breathing is stertorous, pupils dilated, muscles completely relaxed, and the patient perfectly insensible. In the fifth degree, respiration becomes difficult, feeble, or irregular, and finally ceases, and is followed by cessation of the heart's action, and death.

"Churchill gives three stages: First, a stage of excitement; then follows calm sleep, and then stupor.

"In Druitt's *Surgery* we also find three stages or degrees of action given. The first 'is merely a pleasureable feeling of half intoxication; the second is one of extreme pleasure, being similar to the sensation of breathing nitrous oxide gas; there exists in this stage a perfect consciousness of everything said or done, but generally an impossibility of motion; in this stage, also, there is not exactly an insensibility to pain, but rather an indifference, a care-for-nothing sort of feeling, and if surgical operations be performed in this stage, the patients almost always recover before the operation is completed, and the results are unsatisfactory. The third degree is one of profound intoxication and insensibility; the individual is completely lost to external impressions; the muscles become prostrate, the circulation lessens, and the temperature falls.'

"The order in which the different parts of the nervous system become affected during the inhalation of choloroform, is stated to be as follows: First, the cerebral lobes; next, the cerebellum; third, the spinal marrow; and, finally, the medulla oblongata, which is, of course, soon followed by death. This is, no doubt, the general mode or order of its action, yet it may influence one part of the brain in one subject, and in another act primarily on a different portion of the nervous mass, and the results be very different. Thus Meigs, in his work on Obstetrics, says, in regard to the action of ether and chloroform, that 'the statements show that the power of these anæsthetics is capable of abolishing the sensibility, without greatly interfering with the motor power of the subject, or it may abolish the motor power, and allow the sensitive power to be acute as in health. The inhalation may produce anæsthesia of the thinking brain, yet have the co-ordinating breathing and seeing brains intact, or it may put a temporary end to the power of the cerebellum and tubercula quadrigemina, without influencing the other parts of the encephalon.' At other times the whole force of vapor inhaled seems to be directed to the nerves of the heart, and death results from syncope; nor does it seem to depend on the amount used, or the degree of dilution with air, but depends probably, as is stated by Prof. Wood, 'on some idiosyncrasy of the patient, in the same way that one grain of calomel will sometimes salivate.' And as there is no way of telling before its use what the effect may be, it is a matter of paramount importance that its administration be carefully watched, and its exhibition suspended at the first unfavorable symptom, such as failure of the pulse, stertorous breathing, etc., and it is absolutely necessary that its administration be entrusted only to competent hands."

MISCELLANY.

THE *British and Foreign Med.-Chir. Rev.* gives the following resumé of some "experimental researches on various questions concerning sensibility. Brown-Séquard has examined how long sensibility lasts in parts of the body deprived of the circulation of the blood, by applying ligatures on the femoral artery of animals; and after having divided this vessel between the ligatures, amputating the thigh completely, with the exception of the two large nerves. The author thus found the duration of sensibility in the toes of rabbits to vary between twenty and twenty-three minutes; in guinea-pigs, between forty and fifty minutes, sometimes even more than an hour; in dogs, between thirty and thirty-five minutes.

"Brown-Séquard further inquired into the influence of temperature on the duration of sensibility in parts deprived of the circulation of blood, and shows by his experiments that the lower the temperature the longer sensibility persists in parts deprived of circulation.

"The same author tried to solve the question whether augmentation in the vital properties of the spinal cord is able to influence the duration of sensibility in limbs deprived of the circulation. He therefore divided, in one series of experiments, the posterior columns of the spinal cord *before* amputating the hind limb, except the nerves; while in another series he divided the part of the spinal cord mentioned *after* having made the amputation. In both series the sensibility was found to last notably longer than in animals in which the posterior columns had not been divided. The author explains this by the fact that, after section of the posterior surface of the spinal marrow, all the parts of the body which are behind the section become much more sensitive than they were previous to the operation. A remarkable fact mentioned by Brown-Séquard in connection with this question is, that in a rabbit in which the spinal cord is in the normal condition, and in which the toes, after partial amputation, as in the experiments described, have almost lost their sensibility, there is 'a very notable return of this vital property' when the posterior columns of spinal cord are divided in the dorsal region. 'These experiments show,' the author reasons, 'that when sensibility seems to be lost in a part deprived of circulation, it is not completely so, but that the transmitted excitation which causes sensation is too slight to produce it, and that if, in its way to the sensorium, this excitation meets with a cause of increase, then sensation can be produced by it.'"

In a notice of Dr. Richardson's Work "On the Medical History and Treatment of the Diseases of the Teeth," (*Ibid.*,) the following observations occur in relation to the influence of certain eruptive affections in producing various abnormities of those organs. "As the subject has been more specially treated of by Mr. Salter since the lectures were delivered, with a different result from that obtained by Dr. Richardson, we cannot forbear particularizing the views laid down by the former gentleman, as respects the effects of the eruptive diseases in producing caries, atrophy of the teeth, and disease of adjoining structure, etc. It is no doubt an ancient and a prevailing opinion that eruptive diseases do bring with them very frequently danger to the teeth and neighboring parts. This view is held by Mr. Salter, who in the place alluded to above states that he considers that in the eruptive diseases the '*materies morbi* affect the teeth by virtue of their being members of the dermal or tegumentary system, the system upon which the poisons of the eruptive fevers spend their force, and that, blighted and irretrievably destroyed, they light up in the surrounding periosteum an inflammation which, while it is destructive or curative, etc. etc.'

"Not so thinks our author, Dr. Richardson. His opinion is emphatically given, that, excepting small-pox, there is no proof that any of the eruptive fevers produce the said affections of the teeth and adjoining parts alluded to; but that these are rather to be attributed either to pre-existing syphilis or to a 'mercurial treatment pursued for the cure of the disease.' 'Certain it is (he says) that the whole of the infantile diseases, small-pox excepted, may occur during the formation of the permanent teeth, and yet a set of permanent teeth may follow as perfect as may be desired.' This question can only be settled by rigid observations carried on with direct reference to the question."

In the course of an able review of the experimental researches of LALLEMAND, PERRIN, and DUROY to determine what becomes of alcohol in the living body, the editor of the *Westminster Review* thus alludes to the results of their investigations on chloroform. "Having invented a method of detecting the presence of chloroform in the blood, and in the tissues of the body, they had succeeded in proving that when this agent is inhaled it is received in substance into the blood, and is conveyed to the brain, from which it may be extracted after death; while, on the other hand, if the inhalation of the vapor be suspended, the chloroform is rapidly eliminated from the system, not by a combustive process, but by passing in substance into the pulmonary exhalation. Encouraged by these results, they desired to extend the same method of inquiry not merely to other anæsthetic agents, but also to various substances which had more or less of affinity to them; and they naturally turned their attention in the first instance to alcohol, the relation of which to the ordinary anæsthetics is the closest both in its chemical composition and in its physiological action."

In the treatment of hare-lip, MR. E. WOAKES, JR., thinks, (*Braithwaite's Ret.*,) that "instead of using the ordinary hare-lip pins and twisted silk, it is a better plan to pass silver wire through the parts, fastening the projecting ends by small perforated splints, precisely as the quill suture is used in operations on the vagina for prolapsus or ruptured perineum. The edges may be brought together much more accurately; three or four very fine silk ligatures only are required to be inserted along the edges of the wound very superficially. The chief advantages of this mode of operating are that the scar is less than when the pins are used, and the ulceration caused by the pins is avoided."

The Paris correspondent of the *Lancet* states that "another contribution to our already known catalogue of diseases, and one for which, if M. Duchenne were the author of the complaint, and not merely the discoverer, mankind would have little to thank him, is that of 'Progressive muscular paralysis of the tongue, soft palate, and lips.' That such a pathological condition does exist as a *distinct* morbid species—a malady *sui generis*—is now beyond all doubt proved, and from the gravity of the disorder, and its (hitherto) invariably fatal termination within a period of three years, early recognition and cautious prognosis become most important to the medical man. The affection commences in the tongue, the mobility of which is gradually diminished, and eventually lost—a condition which renders deglutition difficult, and pronunciation of the lingual sounds impossible. The paralysis of the tongue is confined to the nerves of motion, for its investing mucous membrane, as well as that of the rest of the mouth and pharynx, retain a normal degree of sensibility. The successive and characteristic spread of the malady to the muscles of the soft palate and lips, nullifying their action, and depriving the patient of the power of swallowing, completes the symptomatic *ensemble* of this curious disorder. I am told by M. Duchenne that he has seen thirteen such cases since the year 1852, and in the *Gazette des Hôpitaux* of this week I see a fourteenth case reported by a provincial medical man, Dr. Copette, of Chauny, as having occurred in private practice. Hitherto this, like the former malady, has been found to resist all treatment."

In the course of a lecture on the fifth pair of nerves, in the *Amer. Med. Times*, (February 9,) Prof. Dalton invites "attention to the fact that, after division of this nerve, its two separated parts will sometimes reunite. We are too much in the habit of supposing that when a nerve is divided its function is permanently destroyed; but a nerve may unite just the same as a divided muscle may grow together again, only union in the former case is comparatively slow. That I have seen to be the case with the motor branch of the fifth. In the animal which you have just seen, immediately after the operation, there were all the symptoms which usually follow complete division of the fifth pair, viz., loss of sensation on the corresponding side of the face, and loss of power over the muscles of mastication. During the last three or four weeks, however, I have noticed that both the sensibility and the muscular power have been gradually returning. As I touch the cornea of the right eye, you see that there is evident sensibility in that part, though still considerably less than on the opposite side. The power of motion in the masticatory muscles of the right side, which was at first entirely lost, is now also rapidly returning. By placing the fingers on the side of the cheek while the animal is feeding, it is very easy to ascertain that the masseter on the right side, though somewhat emaciated from disuse, still contracts very distinctly whenever the lower jaw takes part in the masticatory movements. The fifth pair, accordingly, supplies general sensibility to the integument and mucous membrane of the face, and, by its motor filaments, presides over the movements of mastication."

The *Amer. Med. Times* says that "Dr. Petrie, in a letter to the London Medical Times and Gazette, thinks death from chloroform often due to the position of the patient, the face turned upward, in consequence of which the tongue, by its own weight, falls back, carries the epiglottis close down to the top of the windpipe, closing the glottis, when inspiration at once ceases. He proposes the lateral position, for the purpose of obviating the casualty, and ascribes to this its safety in obstetric practice."

In relation to the removal of the whole tongue, it is stated, (*Ibid.*,) that "Mr. Syme has twice undertaken the operation of removing the organ at the hyoid bone; both patients died from a low form of secondary pneumonia, probably from some atmospheric, accidental, or constitutional cause, the wound in both instances continuing in a perfectly healthy condition. Mr. Fiddes, of Jamaica, has since operated successfully, proving that the operation, though dangerous, may be undertaken with reasonable hope of success."

The following, from a review of a work on the "Surgical Diseases of Children," in the February number of the *Maryland and Virginia Med. Jour.*, will show the difference of opinion which exists in regard to the true pathology of ranula. It is probable that both views are correct, as the affection may be engendered in either way. "In regard to ranula we are glad to see that Mr. Forster adopts the correct view of the pathology of the disease, which is adverse to the old idea that it is due to obstruction of the submaxillary or sublingual ducts. Ranula is dependent upon obstructions of mucous follicles under the tongue, and corresponds with the cysts which are frequently met with in other parts of the mouth. Bernard has for some time objected to the more generally received view, and we have had several opportunities of confirming the accuracy of his statement."

In treating of the structure and relations of the teeth, (*Med. and Surg. Reporter*,) DR. D. HAYES AGNEW observes, "the cementum, being very similar to bone, will be reproduced occasionally, and hence, when fractures occur below the neck, union will sometimes take place. The cement may become inordinately increased, forming protuberances. Such are called *exostoses*. In these cases, the structure resembles in its anatomy true bone possessing Haversian canals and canaliculi."

In the course of an interesting report on physiology and pathology to the St. Louis Med. Soc. by DRS. WHITE, MARSH, and BAUMGARTEN, it is stated (*St. Louis Med. and Surg. Jour.* Jany.) that "the researches of H. Snellen, 'On the Influence of Nerves in Inflammation,' lead him to the opinion that there is no proof of any nervous influence causing the dilatation of the blood-vessels. The following is a synopsis of his conclusions: '1. Excitation of the nerves of sensibility determines by reflex action the contraction of the blood-vessels of the neighboring parts. 2. Contraction of the blood-vessels is followed after a little time by their dilatation. 3. The nerves of the blood-vessels modify nutrition, by acting on the calibre of these conduits. 4. The inflammatory process does not consist essentially in a modification of the nervous influence. 5. The inflammation of the cornea that manifests itself after section of the trifacial nerve, is not the direct result of absence of nervous influence in the ganglion of Gasserius.' He differs from Bernard only in denying a nervous influence to cause *dilatation* of the blood-vessels."

According to the same authority, "the influence of the nerves on the inflammatory process has been very thoroughly tested by *Samuel*, (Koenigsberger Med. Jahrb., 1858,) who instituted experiments on frogs and different mammals. He acknowledges, that inflammation in cold-blooded animals is of another form than in mammals; that it is characterized in the former especially by stasis, in warm-blooded animals by exudation. Electric irritation of the ganglion of Gasserius invariably produced inflammation of the cornea and conjunctiva, which was determined to be independent of any subsequent traumatic influences. The other parts of the eye derive their trophic nerves from other ganglia, and therefore did not become inflamed. The results of these very valuable experiments are condensed by the author in the following: '1. Acute inflammation is a lesion of nutrition, induced by intense irritation of cells, tissues, and organs. 2. The irritation can have acted on these parts directly, or indirectly, by the influence of their trophic nerves. 3. The lesion of nutrition consists in an overtransudation (hypercrinie) of plasma from the vessels, increased reception of plasma into the tissues, and active new formation of cells. Among other lesions of nutrition it is distinguished by the rapidity of its access with the character of danger. (Virchow.)"

In his summary of medical intelligence, (*Cincinnati Lancet and Observer*,) DR. C. A. HARTMANN gives the following on the hypodermic treatment of neuralgia: "The treatment of neuralgia by the injections of narcotics and sedatives has been ably expounded, with illustrating cases, by Dr. A. Ruppaner, of Boston. His first step is to determine the precise seat of irritation, to localize the pain. 'According to Valleix (*Traité des Neuralgies*, Paris, 1841,) the points from which all really neuralgic pains proceed may be arranged under four heads: 1. The place of emergence of the nervous trunk, for example, the trifacial at the supra and infra-orbital and mental foramen. 2. The point where a nervous twig traverses the muscles to ramify on the integuments, similar to the parts which are traversed by the posterior spinal nerves. 3. The point where the terminal branches of a nerve expand in the integuments, as the terminal principal branches of all the cutaneous nerves, among which we may mention the anterior part of the intercostal nerves. 4. The point where nervous trunks become superficial during their course, as the peroneal nerve.' "

In a paper on the effects of injuries of the joints and periosteum in California, (*San Francisco Med. Press,*) Dr. Cooper affirms that "the pressure upon the gums of plates holding artificial teeth not unfrequently produce disease in the periosteum of the jaws, and, in several instances we have known, resulting in severe disease of the bony structure."

"Dr. Robertson has found" (*Druggist*) "that the *Ambrosia trifida* has more prompt remedial powers in cases of excessive ptyalism than anything he had ever previously tried. His patients are described as being generally relieved in six or eight hours of the most urgent symptoms, and completely cured in two days. The preparation employed is an infusion of the green leaves, used frequently as a gargle. Dr. Robertson suggests that the plant may be found useful in other profluviæ—as leucorrhœa. The plant is known under the popular name of horseweed, horsemint. Dr. Robertson was induced to try it from observing that it completely cured a horse affected with slobbering."

The *Chemist and Druggist* says that a new metal named Cæsium "has lately been added to the already long list of those substances. Cæsium was discovered by MM. Bunsen and Kirchloff. These gentlemen found that certain lines contained in the spectrum produced by burning chlorides in alcohol afforded a most delicate method of analysis. The rays and lines shown by the chlorides of the alkali metals are perfectly well defined, while those of barium, strontium, and calcium are more complicated. Sodium shows a yellow ray, polanium a purple, and lithium a red ray, the absence or presence of either ray indicating the corresponding presence or absence of these metals. M. Bunsen found that in examining the products of the mineral waters of Krewzuaeh, a new ray made its appearance, indicating the presence of a new metal. They have since proved the truth of their supposition by evaporating twenty tons of the water, which had yielded 250 grains of the platinum salt of the new metal."

The same journal gives the following on the chemical constitution of cast-iron and steel: "Fremy confirms the observations of Caron relative to the influence exerted by nitrogen over the phenomena of *steeling;* he finds that the *humus*-looking substance which is left after treating cast-iron with bichloride of copper disengages, when heated, a considerable quantity of ammonia, and shows an analogy with certain derivatives of cyanogen. He regards cast-iron and steel as combinations of metal with a compound radical comparable to cyanogen, and which, like it, is produced directly by combination of carbon with atmospheric nitrogen."

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The Institutes of Medicine. By MARTYN PAINE, A.M., M.D., LL.D., Professor of the Institutes of Medicine and Materia Medica in the University of the City of New York, etc. etc. Sixth Edition. Harper & Brothers, 1860. (From the author.)

The Institutes of Medicine treat of those broad principles of science concerned in the development, preservation, and perfection of the living organism. It includes more especially those particular branches of medical science known as physiology, pathology, hygiene, and therapeutics, and constitutes in fact the philosophy of medicine. Its immediate object is to thus determine the laws of health and disease, and point out the means of preserving the former and resolving as well as preventing the latter. In the work before us an elaborate effort has been made to unfold these great principles of medical philosophy, and, although it may be questioned whether the fundamental doctrines taught therein do not more fully represent the knowledge of the past than of the present, yet they are presented in such an original, learned, and philosophic manner that they cannot fail to instruct even when they do not convince. Independently, however, of the opinions which may be entertained respecting the particular views inculcated in this work, the extensive erudition and profound philosophy which characterize it, as well as the immense amount of information it affords upon the subject of which it treats, commend it to all interested either in speculative or applied medicine, and make it desirable for the library of the student of biological science. The value of this treatise is greatly enhanced by a copious analytical index which gives a general resumé of its contents, with numerous references to the more important parts. It is printed in excellent style and is handsomely and substantially bound.

Lectures on the Physiology and Pathology of the Central Nervous System, delivered at the Royal College of Surgeons of England in May, 1858, by C. E. BROWN-SÉQUARD, M.D., F.R.S., etc. etc. Philadelphia: J. B. Lippincott & Co., 1860.

This work consists of a series of twelve lectures upon the important subjects indicated by its title, and contains, according to its author, the results of the principal part of his labors since he began the study of medicine. Though so successful in the cultivation of this particular department of study as to be generally regarded a leader therein, yet, like a true student of science, he expresses a wish for more enlarged information thereupon, and desires any one who has any knowledge upon the recondite subjects treated of to present such to the profession in order to thus more speedily and positively settle the many important questions still sub judice. With regard to the merit of these prelections it is scarcely necessary to say more than that they are of such high scientific and practical value as to render them of peculiar interest to the physiologist, pathologist, and therapeutist. The typography is good, illustrations superior, and binding neat and in keeping with the rest of the work. Price $2 25.

Lectures on the Diagnosis and Treatment of the Principal Forms of Paralysis of the Lower Extremities. By C. E. Brown-Séquard, M.D., F.R.S., etc. etc. Philadelphia: J. B. Lippincott & Co., 1861.

This is another one of those really valuable works which the practitioner of medicine so highly prizes, as it enables him to better understand and overcome those serious difficulties which he so frequently meets with in the circle of professional life. It consists of four lectures, occupying 118 octavo pages, beautifully printed on good paper and neatly bound in cloth. Price $1 50.

Theory and Practice of the Movement Cure: or the Treatment of Lateral Curvature of the Spine; Paralysis; Indigestion; Constipation; Consumption; Angular Curvatures, and other Deformities; Diseases Incident to Women; Derangements of the Nervous System; and other Chronic Affections, by the Swedish System of Localized Movements. By Charles Fayette Taylor, M.D. With Illustrations. Philadelphia: Lindsay & Blakiston, 1861.

Under this somewhat cacophonous title the author of this work introduces a method of treating various diseases and deformities by systematic movement in accordance with the principles and teachings of physiology. He first discusses the principles upon which such treatment is founded, and then points out, with diagrams and cases in illustration, their practical application for the removal of both congenital and acquired abnormities. As the course of treatment of which this work is an exponent is founded upon a philosophic basis and is applicable to many conditions now too generally regarded as irremediable, it will prove a useful auxiliary to the present method of dealing with such difficulties, and should therefore be studied by every one engaged in the practical duties of medical life. The typography, illustrations, and binding of this book are such as will commend it to the student. Price $1 00.

A Colloquy on the Duties and Elements of a Physician. By Thomas S. Powell, M.D., Professor of Obstetrics in the Atlanta Med. College. Written at the request of his private class. (From the author.)

In this little brochure the author earnestly enforces the necessity for superior mental culture to the physician, and inculcates those high principles of honor, virtue, and self-reliance which should characterize every one engaged in the responsible duties of ministering to the infirmities of his fellow-men. Its perusal will afford both pleasure and profit to those interested in the subject of which it treats.

Baltimore Journal of Medicine. Edited by Edward Warren, M.D., Professor of Materia Medica and Therapeutics in the University of Maryland.

This is a new and handsome bi-monthly of over one hundred octavo pages, at $3 00 per annum, in advance. It is ably conducted and filled with matter of much scientific and practical interest. It therefore deserves and should receive the support of the medical profession. We wish it every success, and exchange with pleasure.

THE
DENTAL COSMOS.
NEW SERIES.

VOL. II. PHILADELPHIA, APRIL, 1861. No. 9.

ORIGINAL COMMUNICATIONS.

PRACTICAL HINTS.

BY J. D. WHITE.

In the first article on setting pivot teeth, we remarked that we would describe a plain case of a front tooth, the nerve being dead, and in our last article would give the variations of the operations in our next.

Every case requires the exercise of a little judgment on the part of the operator, as to the best course to pursue. If a case presents itself with a living nerve that had better be destroyed before the crown is reduced, this may be done by applying the usual paste, or with a hot instrument, if the patient is willing to let the latter operation be performed; but we would remark here that we never use the hot instrument, as the idea of it shocks the patients as well as their friends, and it is told wherever they go, much to the injury of the operator. It is admissible, however, if the patient has not the time to go through with the usual process required when the paste is used. Sometimes a tooth is very much broken off or worn down before the nerve is exposed. In such cases we drill as nearly into the pulp as we can. If a very thin and sharp drill be used, requiring but little pressure to make it take hold, the nerve can be entirely exposed without causing much pain; we then apply the paste, and in one or two applications succeed in destroying the vitality as far as is necessary. Of course, as a rule, all the six front teeth will admit of receiving a pivot, and sometimes the bicuspids of the upper jaw. The bicuspids and canines of the lower jaw always are capable of being pivoted, but very seldom the front incisors. We have already given the manner of making the ordinary pivot, but the deviations are when the root is much decayed, so that if it were freed from the softened portion it would require a cone-shaped pivot, which of course would not well hold a tooth for any length of time. In such cases we drill as deep into the root as we can venture with a drill which will make a hole with parallel walls, perhaps one-third or half the length of the pivot; then we make the pivot to fit the cone-shaped part of the cavity, and the extremity of the pivot cylindrical. So as to fit the bottom of the hole, the pivot should be made to fit all parts of the cavity of the root perfectly. We always use a wire in those cases, except where the shell of the root is weak, because if the pivot is too strong for the root a hard bite on the tooth will split the root of the tooth. It is better that the pivot should break than the root. It requires some judgment to know how strong a pivot should be made for a case to give the greatest advantage to the patient. For bicuspid teeth we very seldom use more than one pivot, as they cannot be managed well; we of course put the pivot in the buccal root and drill out and plug the palatine. We are always careful to file the roots of all teeth into the festoons of the gum as much as possible, to make as deep a saddle as we can to set the crown of the tooth in, as it will prevent it from turning during the act of chewing. In bicuspid roots we always set bicuspid crowns, as the under teeth hitting into the cleft of the uppers keep them in place. We sometimes see canines set in those cases, which is very bad practice where it can be done otherwise. Sometimes the under teeth strike so far into the space where a tooth is required on the upper jaw, that an ordinary pivot tooth cannot be set. In such cases a plate tooth can be set in the following manner: Solder a strong plate to the tooth as a backing, and to this a round wire for a pivot; drill a piece of wood to fit the gold pivot, then dress this down so as to fit the hole in the root; place it in the root, keeping it dry; dress it even with the root and place your tooth in, and the operation is complete. This makes a very good and strong job.

About twenty years ago we introduced a very good method of setting a pivot tooth where a root is very much decayed. We drill as deep into the root as the case will admit of, and place in it a tube open at both ends, as large in diameter as we wish the pivot to be; we plug the lower end of this tube and the nerve canal, leaving depth enough only for a pivot. Of course around this is a groove between the margin of the root and the tube. This we plug with gold and set on the crown, as though it was a sound and good root. In some cases in this tube we have fitted a solid gold wire, which makes a very good operation. Sometimes, in using natural teeth, we dress the root of the tooth to be set so as to pass into the root in the mouth instead of using a cone-shaped pivot, which makes a good operation. We think the foregoing outlines are sufficient to direct any one with a reasonable amount of skill and judgment of his own to make a good operation in pivoting teeth.

(To be continued.)

Entered, according to Act of Congress, in the year 1860, by JONES & WHITE, in the Clerk's Office of the District Court for the Eastern District of Pennsylvania.

TREATISE UPON THE GENESIS AND DEVELOPMENT OF THE DENTAL FOLLICLES TO THE EPOCH OF THE ERUPTION OF THE TEETH.

BY DRS. CH. ROBIN AND E. MAGITOT.

[Translated for the DENTAL COSMOS, from the "*Journal de la Physiologie de l'Homme et des Animaux*," DR. E. BROWN-SÉQUARD, editor, by E. SUREAU.]

CHAPTER II.

GENESIS AND MORPHOLOGY OF THE DENTAL FOLLICLE, FROM ITS APPEARANCE TO THE BIRTH OF THE IVORY.

WE will now turn our attention to the tissues and organs which originate in the jaws before the dental bulbs, at the heart of which appear the follicles, and the development of which, from that time, corresponds with that of the latter organs.

In the first paragraph of this chapter we will consider the order in which those follicles appear, which exist at the period of accouchement. We will publish in another work, the result of our researches upon the time and precise place of the appearance of the follicles of the permanent teeth in relation to the temporary ones.

We will point out in the second paragraph, the manner of the genesis of the bulb, of the follicular wall, and of the organ of the enamel, which are, at least in man, the only constituent parts of the follicle considered in its entirety as a single organ.

The following paragraphs will be devoted to a description of the phenomena of evolution exhibited by each of the constituent parts of the follicle.

That which strikes us most in the consideration of this subject is the uniformity of appearance, and intimate constitution of all parts of the follicle, in the various species of animals, at corresponding ages; the shape and size of the follicles differing only as much in each kind of tooth as in each species of animal.

§ 1. *The order of the appearance of the follicles in the groove of each jaw.*—The follicles which originate first are, as we have said, those of the lower jaw—those of the upper being a little later. We have proved this fact in all the mammiferæ that we have examined.* In consequence of this, at the time of the eruption of the teeth, the development of the lower follicles is always a little more advanced than those of the superior maxillary. We will also see that the ivory appears on the surface of the bulb of the former a little before it is produced in the latter.

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* Some authors are mistaken in asserting that the follicles of the lower jaw appear a little later than those of the other. (Vide Henle's General Anatomy.)

It is, as has been stated, near the sixtieth day of the human fœtus that the first follicle shows itself in the lower jaw, and about the sixty-fifth day in the upper.

Thus the follicles do not appear at the same time in the two jaws, or in either of them in particular; but the order in which they originate in the one is reproduced in the other. This fact is observed in all the mammiferæ; but in order to find which tooth is the first to appear in each of them, it is necessary to make direct observations—for the reason that in some of them it is an incisor, as in man; in others it is the canine, as in the hog; or a molar, as among the ruminating animals. In the case of the latter, this fact coincides with the absence of the incisors in the upper jaw.

If we consider the order in which each of the constituent parts of the follicle appear in particular, we will find that the bulb always originates first; the wall very shortly after, but still a little after; and in the last place, appears the organ of the enamel, as soon as the follicular wall is closed.* In all of them the development of these constituent parts, and consequently that of the follicle, is effected in the same order of similitude and succession. It is in the follicle which appears first, that the follicular wall closes, the organ of the enamel appears, the ivory originates, and the enamel after it. These phenomena are accomplished in the same order in the second follicle, but a little later, and also in the others, in every species of mammiferæ or of tooth; we do not find that a follicle originating before another is outrun by the latter in its primitive original development. But it is important at present, that we should not confound that which relates to the development of these parts of the follicles, with that which concerns the tooth, as a resistant organ, having a crown or exterior part, and a radical or deeper portion. It is an established fact that each tooth once produced, as far as the ivory and enamel, follows a method of evolution proper to itself, and as distinct from the manner of development of the follicle, as the ivory is from the tissues which form the follicle—this development differs in the teeth according to their size and degree of complication. For example, in the calf, the crown is more rapidly completed in the incisors than in the molars, which are larger and more complex, notwithstanding the fact that the dentine appears in the former a considerable time after it appears in the latter. Thus, among calves, the eruption of the incisors is, nevertheless, commenced at birth and completed in a month, much before the eruption of the molars.

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* M. Oudet and several other authors have said, that the parts first formed are the membranes of the dental follicles, and that it is at a more advanced period, in the course of the third month, that a small yellowish body, the pulp, is developed at the extremity of the vessels of the follicle. This pulp, rising little by little, lifts the internal membrane, which in this manner becomes its exterior envelope. (Oudet, *loc. cit.*, 1835, p. 98.) We will show that this opinion is incorrect. Raschkow is also wrong in saying that the wall appears first, followed by a nucleus formed of corpuscles or *angular grains bound together by fibres;* he names it *the organ of the enamel;* and makes it originate before the bulb or dental germ. He remarks that the wall is vascular from the beginning, especially on the side of the dental nerves and vessels where its capillaries reach it. (Raschkow, *meletemata circa mammalium dentium evolutionem.* Vratislaviæ, 1835, page 12.) M. Guillot admits that the follicle originates by a mass which he calls the *initial spheroid* or *primitive trace* of the teeth; that three distinct divisions rapidly appear in these spheroids by a sort of partition. One of them is central, and he calls it the *nucleus* or *noyau*, a name of ambiguous signification—it is the dental germ or organ of the ivory. The second is situated around the other, and is the middle *zone* or organ of the enamel. The exterior third one is organized in a fibrous sack when the germs of the ivory and enamel have been for a long time formed in the generating part—later still, it becomes vascular. (Guillot, *loc. cit.*, 1859, vol. ix. pp. 289 to 297.) It will be proved hereafter that these phenomena do not occur in this manner.

Eruption is then a phenomenon, which is subordinated especially to the development of the tooth as an organ, and is not in absolute connection with the origin and development of the follicle itself. This phenomenon is complicated, moreover, by all that belongs to the development and to the atrophy of the maxillaries and gums, as is shown by the eruption of the wisdom tooth. In consequence of this, the appearance of the teeth does not occur in all animals in the same order as the birth of the follicles to which they correspond. One of these phenomena cannot therefore be judged strictly by the other.

On the contrary, the regularity with which the essential parts of the follicle succeed each other, and complete their own development, according to the order of their first appearance, enables us, where several follicles are united side by side, to be certain that those most developed in structure are the oldest, even when they are of less size than some of the others.

In the practice of anatomy, accordingly, the one which appears first is the only matter of difficulty in determining the precise period of the appearance of the follicles. This point once fixed, the degree of advancement of those found at its sides at a subsequent period, is in itself sufficient to show the time of their origin in comparison with that of the first.

In the human fœtus the follicles appear in nearly the same order as the issue of the corresponding teeth, for each of the jaws considered individually. Thus, the follicle of the anterior molar and that of the internal incisor appear at nearly the same time, and the dentine afterward shows itself in both simultaneously. (Plate I. fig. 1, *m m.*) The external incisor follows them closely, the posterior molar comes a little later, and the canine last; it continues for a long time situated on a plane, which is nearer to the corresponding dental nerves and vessels than to the others.*

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* According to Henle the follicles appear in the following order: anterior molar, canine, internal incisor, external incisor, posterior molar; but this is not correct.

The number of follicles of the first dentition is now complete. (Plate I. fig. 2.) This takes place near the seventy-fifth day in the lower jaw, and about the eightieth in the upper one. A new follicle now originates at the posterior extremity of the maxillary groove, almost immediately behind the follicle of the large molar—this new follicle is that of the first permanent large molar, (plate I. fig. 2, *f*,) which emerges, as we know, about the sixth year. This follicle makes its appearance in the lower jaw at the eighty-fifth day, and varies in the upper jaw from the ninetieth to the ninety-fifth day after conception. As to the teeth of replacement, some are produced only a little before birth, and sometimes a little after; and the others after birth at longer or shorter periods.*

In the hog, the follicle of the canine appears earliest (Plate I. fig. 5, *d*,) at the time when the fœtus is about 2·56 inches from the vertex to the root of the tail. The large middle molar of the first dentition (*f*) appears almost as soon, and, at the same time, the large or middle incisor (*a*.)

In the ruminating animals, (Plate II. fig. 1,) such as the calf and lamb, the first follicle is that of the first large molar (*e*,) near the time when the lamb is about two and a half inches, and the calf three and a half inches in total length. These dimensions correspond nearly, in the two species, to the twentieth and twenty-fifth day after conception.

During the time that the molars of the ruminating animals are being developed, there is a simultaneous evolution of eight of the incisors. (Plate II. fig. 2.)

M. Oudet had already pointed out, following M. Serres, (*loc. cit.*, 1835, p. 441,) 1st, that at the beginning of the third month the follicles of the two incisors and of the two molars are separated by quite a large interval; 2d, at the end of the third month the sack of the canine is discovered in the midst or beyond the interval mentioned above; 3d, at the end of the fourth month appears the sack of the first large permanent molar. We have seen that the follicles originate sooner and in a somewhat different order. He says also, as did Hunter, (1771,) and it has been repeated by many other authors, (Goodsir, etc.,) that in the course of the seventh month the sacks of the permanent incisors are distinctly visible, and those of the canine and the second large molar a little later. In man, it is only at birth or a little before it, as we will find, that the incisors and permanent canines originate at the side of the others. We cannot therefore agree with M. Guillot, that in the human embryo, at the age of three months, the initial follicle of the incisors of the second dentition is already visible at the side of those of the first. (*Loc. cit.*, 1859, vol. ix. p. 312.)

* Bischoff says that the "edge of the maxillary of the fœtus is very thick and swollen, because it contains the germs of the milk teeth, and even some of those of the permanent teeth;" that "the first rudiments of the permanent teeth appear at a very early period, and all of them during the embryonic life." Further on we will see that this hypothesis is not more correct than that one of Goodsir, according to which, the follicles of the permanent teeth are developed as by small recesses of the mucous membrane, being produced from the fourteenth to the fifteenth week of the intra-uterine life, but which become complete cavities before inclosing a bulb, which bulb shows itself there, however, only from the fifth month.

It is easily seen that the follicles of the two large or middle incisors (*c*, *d*) originate after that of the first large molar, and nearly at the same time as that of the second false molar, while the follicles of the two last or small incisors (*e*, *f*) correspond to the appearance of the follicle of the second large molar.

§ 2. *Mode of genesis of the dental follicle.*—It has been already stated that all parts of the follicle do not originate at the same time—that the bulb comes first, the follicular wall next, and the organ of the enamel last. Their origin is by the mode called *genesis.*

The precise place where the follicles have their beginning is worthy of attention. The bulbs do not have their commencement close to the dental nerves and vessels already existing, but a little above them in the thickness of the sub-mucous tissue that fills the groove, and nearly at the middle of the depth of the groove. The base of the follicle afterward draws a little nearer to these vessels and nerves, when that organ grows larger.

It is interesting to follow the general phenomena of this genesis before directing our attention to its details.

A little before the birth of the first vestiges of the bulb, the corresponding part of the sub-mucous tissue, which fills the maxillary groove, becomes more opaque and especially more vascular than the surrounding gelatiniform tissue. The increase of opacity at this point depends upon an accumulation of fibroplastic nuclei, and upon a relative diminution in the quantity of amorphous matter.* The vascularity of this point becomes at the same time considerable. The capillaries, indeed, form some polygonal meshes of about twice the diameter of the limiting capillaries. These nets are very distinct from the neighboring ones, on account of their abundance and their configuration, and they form in their totality a band answering exactly to the level of the tissue, where the development of the follicles must occur, (Plate II. fig. 2, *b*.) These nets are a little prolonged near the bottom of the maxillary groove, in the shape of round festoons, which give the vascular band an undulated appearance. A small obscure mass appears in the middle of each of these festoons—these masses are the bulbs; in the ruminating animals those of the four large incisors appear first and the four small ones afterward. At the beginning, these bulbs are nearly round, the transverse diameter being greater than the vertical; the lower edge is distinctly marked, while the upper edge remains diffuse. When the bulb reaches a certain size, a dark grayish band is formed around it—this represents the follicular wall. The band, after circumscribing the base of the bulb, is lifted above it a distance which at the highest point is nearly equal to its own height, in the ruminating animals, (Plate II. fig. 1, *f*;) but the distance is very much less in man, and in the hog. This band indicates the presence of a sack, but open on the side of the mucous membrane, and the free edge of which reunites with itself a little later, so that, at the time, the follicle is shut, and its cavity is soon divided exactly into two parts—for the reason that the organ of the enamel originates as soon as the occlusion is effected; the lower part is occupied by the bulb, and the upper is filled by the organ of the enamel. When the follicle is thus completed it presents, in the incisors and canines, an ovoid shape lengthened vertically. The bulb then increases considerably, and becomes of greater height than breadth; the summit, at the same time assuming the form of a cone a little flattened from before backward, in such a manner that the organ exhibits the external configuration of an angle similar also to that of the future crown.

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* Raschkow (1835) has shown that the follicle or dental sack originates under the mucous membrane and not by its destruction. The sack is at first free from all communication with the gum, but adheres to it at a later period both directly and by the aid of vessels. It is these adhesions which, seen at a more advanced epoch in the evolution of the follicle, have been incorrectly considered to be primitive, in accordance with the old hypothesis of the pretended production of the latter by the destruction of the mucous membrane. They have also been supposed to be hollowed out of a canal then called *gubernaculum dentis* and *iter dentis*. In spite of the exactitude of the descriptions of Raschkow, these opinions have continued to be held at the same time as the hypothesis of Goodsir, but they have been opposed by M. Guillot, (*loc. cit.*, 1859, vol. ix. p. 287–290.) Raschkow has also noted that the pretended *cartilago dentalis* of the gums does not contain the elements of the cartilaginous tissue, but a thick epithelial bed upon a thick mucous membrane.

From the time that the follicle of the molar is completed by the occlusion of its wall, the diameter, in man, is nearly equal in all directions; but it soon becomes broader than it is high. In most of the other mammiferæ, it shows this particularity from the time of the occlusion of its wall: it is nearly ovoid in the direction of the length of the jaw, and not in the direction of its height.

A short prolongation of the wall is seen at the summit of all these follicles a little after the occlusion of the wall, and at the side where the wall has been. This prolongation is formed, like the wall itself, of fibres and vessels. It crosses to the mucous membrane, and its own capillaries are anastomosed with those of that membrane. (Plate I. fig. 1, *i.*)

In all the mammiferæ and in the reptiles, the bulb at this period shows itself in the form of a small, grayish mass, a little darker than the surrounding tissue from which it is not separated by anything—it is even in continuity of substance with it at the base. But the remainder of the periphery, although immediately contiguous to it, is easily detached, and has a smooth and very clearly defined surface. The grayish color of the bulb, and its want of transparency, in comparison to the surrounding tissue, arises from the fact that it is formed, from the time of its appearance, of finely granulated ovoid nuclei, which we will speak of hereafter. They are separated from each other a little, by a small portion of amorphous matter, which is more granulated and much less abundant than in the surrounding tissue.

At the time of their origin, as has already been stated, the bulbs of the incisors and canines are shaped like a cone, more or less elliptical; and the bulbs of the molars are entirely blunt or merely bulged, and much broader at the base. (Plate I. fig. 3.) At the time that it appears, the bulb is from two to four-tenths of a millimetre in height, and soon reaches from five to seven-tenths at the base, being not quite so broad in the incisors and canines, and almost double this size in the molars.

Thus in the embryos of the mammiferæ, such as man, the hog, the calf, and the lamb, at the time above mentioned, a small, opaque mass makes its appearance in the midst of the soft and transparent sub-mucous tissue. This little mass is composed principally of the ovoid nuclei above mentioned. It is the dental bulb. The base or deeper part is, from the time of its appearance, quite distinctly marked by a semicircular curved line, while the opposite portion is still confounded with the surrounding tissue; but it also is clearly defined a little later. The bulb then acquires a different shape in every species of tooth; its rounded base blends itself insensibly with the rest of its surface. When the outline of the summit of the bulb is marked, a grayish band disengages itself circularly from the base or deeper part—it is darker than the surrounding tissue, but of a lighter color than the bulb, and has a diffused outline. This dark line appears at the very time that the outline of the summit of the bulb is marked, or a little later, and it represents the follicular wall, which is beginning to appear, and which will soon circumscribe the whole bulb, with the base of which it is in continuity of substance.

Thus, in the beginning, the circumference of the base of the bulb is not yet separated by anything from the rest of its extent—their surfaces blend with each other without interruption. But a short time after the origin of this little organ, some filaments are delineated at the circumference of the base; these are darker than the surrounding tissue, without having as little translucency as the bulb, with the tissue of which they are in continuity of substance. They also interrupt the continuity of surface, which exists between the base of the bulb and the rest of its extent.

They soon form a small, grayish band not quite so dark as the little cone itself; the band is in direct contact with the surface of the cone, but the least pressure of the plates of glass separates them—this is shown in Plate II. fig. 1, *f*. In this manner the band circumscribes the surface of the bulb, without being yet closed at the side of the summit; this will soon occur, however, and without its being turned below the base, from the circumference of which the band starts, as will be shown.

This little conical mass is the dental bulb, and the small, grayish band is the wall of the follicle. The bulb appears first, and the follicular wall shortly afterward.

The dental bulb or germ of the ivory, and subsequently the follicular wall—fundamental parts of the follicle—are the first to appear.

During the periods of evolution which follow the birth of the bulb and of the follicular wall, these two parts acquire a more distinct and better determined form. The grayish band is still more exactly distinguished from the neighboring parts; it withdraws a little from the surface of the bulb, and its extremities reunite at the side of the summit of the latter, in order to form a cavity closed throughout, and into which the projecting part or summit of the bulb is plunged.

The appearance of the follicular wall in the heart of the sub-mucous tissue is accompanied by an exaggeration of vascularity. The capillaries, which are thus produced around and in the interior of the wall, are disposed in quite regular polygonal meshes, starting from the base of the follicle and reaching nearly to its summit. The repletion of these vessels is sometimes such, as to cause an opacity in the fresh preparations, which is dissipated only at the end of some hours, or by the employment of glycerin. It is only a little later, but always before the moment of the appearance of the first cells of origin of the dentine, that the vessels and afterward the nerves are developed in the depth of the bulb; until then, the tissue is formed only of the elements which have been mentioned.*

Between the inner face of the wall and the surface of the projecting part of the bulb thus modified, the organ of the enamel originates and is developed during this time. It exhibits the appearance of a clear, transparent mass. It has no continuity of substance with the wall, to which it is only contiguous and adherent at the surface of the bulb, from which a pale and white line separates it shortly after its appearance; an attentive examination shows that this line is formed of a continuous range of the cells of the enamel.† (Plate I. fig. 4, *h.*) In almost all of the mammiferæ this organ has the same general disposition, that is to say, it exactly fits the whole projecting part of the bulb, after the manner of a soft gelatinous plate of nearly the same thickness at all points, and that might be extended upon a mammillated surface. (Plate I. fig. 1, *l.*) A transparent zone, varying in extent according to the species of animal, or the nature of the teeth, appears between the surface of the bulb and the wall, a little after the occlusion of the follicular wall at its summit. This zone, which is so transparent that it might be supposed to be filled with liquid, is occupied by the organ of the enamel, which is always very translucent, but is especially so at the period when it is about to become apparent. It is important that this zone should not be confounded with those interstices, which the pressure of the glass plates produces between it and the wall, by the separation and distention of the latter. These interstices are filled with the liquid of the preparation.*

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* Raschkow (1835) was the first to note that the production of the vessels and nerves is posterior to the appearance of the bulb.

† Raschkow's *membrane of the enamel,* (1835.) He considered it as formed of short, six-sided, juxtaposed fibres, afterward acknowledged to be cells by Schwann, (1838.)

In proportion as the development of the follicle progresses, the edges of the grayish band, which represents the wall, become more and more distinctly marked, indicating inner and outer surfaces, which are better and better distinguished from the contiguous tissues. The band finally forms a quite resistant envelope, which is completely distinct from the neighboring parts, and contains only the bulb and organ of the enamel, which is about to appear. (Plate I. fig. 1, *k*.) The organ of the enamel fills and constitutes the transparent zone, which is interposed between the surface of the bulb and the superior and lateral regions of the follicular wall.

The base of the bulb is at this epoch the largest part, or it is a little less than that portion of the follicle placed immediately above, which is often a little swollen. Consequently, especially in the canines and incisors, it is ovoid at the large extremity, short, almost flat, and turned toward the depth of the tissues. The extremity or base of the follicle is formed by the base of the bulb; it becomes more narrow than the rest of the organ, at the level of the interior furrow, which results from its continuation with the follicular wall. This constriction becomes quite decided in some species—for example, in the human fœtus at birth, when the bulb seems as if it were provided with a pedicule at the bottom of the follicle. It is this narrower portion which lengthens afterward into the radicular part of the bulb and receives directly the vessels and nerves—whereas that region of the bulb which is the first to show itself, and which soon covers the organ of the enamel, corresponds to the coronary part or crown of the tooth.

If, at this period, the whole of the follicular apparatus is placed in one preparation in the focus of a microscope, and considerably magnified, we find that the dental bulb is still formed only of nuclei, the most of which are ovoid, the others rounded. All of these nuclei are less transparent than the embryo-plastic nuclei, they are also richer in fine, grayish granulations, and a little smaller. At the time of the appearance of the bulb and at the approaching epoch of its origin, of which we are speaking, these nuclei are very near each other, without being contiguous. A little slightly granulated amorphous matter is interposed between them, this matter hardly extends beyond the free surface of the bulb; there is none of it at a later period, as we shall see. The follicular wall includes some embryo-plastic nuclei and a little finely granulated amorphous matter, and also some laminated fibres, in the condition of fusiform bodies as well as completely developed, quite compact, and, consequently, forming a membraneous lamina. No cells can be found as yet on the surface of the bulb, any more than on the deep face of the follicular wall, where the bed of epithelium will soon show itself. We have already said, that from the time of its appearance, this wall contains the capillaries, the meshes of which have a determined shape, and remain nearly the same through all the periods of the fœtal life. They will be described subsequently.

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* The clear zone filled by the enamel extends, always diminishing in thickness, as far as the circular furrow, which the bulb and follicular wall form about the base of the follicle by their continuation to this point. Even the slight pressure of the follicle, in distending its wall, not only separates the organ of the enamel from it, but also removes that of the dental bulb. The result is the production of two narrow cavities, separated by the organ of the enamel, which is found as if suspended between them. (Plate II. fig. 5.) These cavities are full of the liquid of the preparation, which penetrates by endosmose, and sometimes holds in suspension some anatomic elements detached from the organ of the enamel. Raschkow has, as well as ourselves, observed this fact, but he considers that the cavities are not accidental, and that the liquid is of a lymphatic nature containing colorless corpuscles. But it can be easily seen, when isolated follicles are observed without any pressure of the glass plates, that the follicular wall is naturally very close to the surface of the organ of the ivory, on account of the thinness and membraneous disposition of the organ at that period—whereas the organ deviates from it, under the eye of the observer, when the preparation is compressed.

The preceding phenomena, which are connected with the appearance of the follicle, are then followed by new modifications introducing changes which are of three orders. They bear upon the size of the follicle, and upon its form and intimate constitution. The bottom, or that part which is most adherent to the surrounding tissues, always continues convex; while the opposite part, which is directed toward the mucous membrane, seems slightly undulated in the follicles of the incisors, and quite regularly conical in the canines. As for the molars, the internal and external faces of their follicles exhibit several conoid or flattened projections. (Plate I. fig. 1.)

It is then readily seen that the projections of the follicle, which are turned toward the gum, reproduce in a general way the shape and number of the projections of the dental bulb itself. This configuration, however, which continues in the bulb, remains perfectly exact in the whole of the follicle only during the time that the wall is not yet in intimate adhesion with the tissue of the mucous membrane. When this adhesion is once ultimately established, it does not allow this envelope to mould itself exactly upon the interior parts of the follicle.

Be that as it may, the general aspect of the follicle, as a whole, bears considerable resemblance to the exterior form of the crown of the future tooth. This depends, as we will see, upon the fact that the dental bulb represents the mould, as it might be called, upon which is developed the follicular wall, the organ of the enamel, and, in short, the crown first and the root of the tooth afterward. For, as the birth of the dental bulb precedes that of all the constituent parts of the follicle, these parts are successively moulded upon its surface.*

The process of increase in the size of the follicle is distributed equally through the whole of its mass. Thus, the follicle of the canine, for example, which at the beginning of the development is only from two to six-tenths of a millimetre in breadth, becomes at the moment of the appearance of the dentine two millimetres in breadth; and in the molars, at the same epoch, this width reaches to three and four millimetres.

When the wall has attained a certain distinctness, the follicle of the molars undergoes the following modifications: it is increased considerably in the direction of its length, that is to say, following the axis of the jaw. This enlargement depends upon two causes: first, the increase in the size of the bulb itself; and secondly, the birth of two prolongations upon the sides of the base. Some small papillæ are seen in front and behind the most projecting part of the bulb; these grow vertically, assuming gradually the shape of pyramids or cones, like the primitive middle projection, which remains, moreover, for a long time higher and more voluminous than the others. There is in all animals as many pairs of them as there are pairs of tubercles at the crown. These projections, which are nothing but the reproduction of the principal tubercles of the crown, continue to rise simultaneously while proceeding toward the mucous membrane. They continue invariably separated from each other by a deep furrow. In consequence of this arrangement the bulb of the molars, in the ulterior periods of evolution, is composed of a single base surmounted by numerous projections, which lengthen more and more, and each of them exhibit individually the form of a cone or pyramid with a sharper and sharper apex; the bulbs then show, in relief, an arrangement of numerous compartments, which will afterward become the pulp cavity, and at the same time the general form of the divisions of the crown.

Among ruminating animals, small lateral projections originate ulteriorly; they are situated nearer the furrow, which forms the junction of the bulb with the wall—these projections will give birth to the lateral tubercles. The follicle of the second false molar appears at a period nearly corresponding, in the ruminating animals, to the birth of the organ of the enamel in the follicle of the second large molar; it appears in front of the latter follicle, and the manner of its evolution is exactly similar. This second follicle is followed by that of the second large molar, and then by that of the first false molar. The evolution of each of these follicles reproduces the series of phenomena already described, with modifications in size and form connected with the varieties of form and size of the future teeth.

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* It is important to remark that these details can only be observed upon fresh pieces isolated from the hard part of the jaw, or still adherent to it, according to the size of the latter organ, and not having yet undergone that flattening, which the preservation of the microscopic preparations between two pieces of glass necessitates. The compression of the follicle gives rise, indeed, to different phenomena, which change the relations and form of the parts considerably. The follicular wall is folded upon itself, (Plate I. fig. 1, *a*, *b*, *c*,) and, as all the organs slip over each other, the bulb is occasionally separated from the organ of the enamel which touched it, and the latter is also sometimes separated from the follicular wall. The follicle, at the same time assumes a nearly spheroidal form, and the projections of the wall are entirely obliterated. It is, therefore, always necessary to take these modifications into account in the preparations of the whole of the follicles preserved after a slight compression.

(To be continued.)

THE PROFESSION IN ENGLAND.

(FROM OUR LONDON CORRESPONDENT.)

The December and January numbers of the two journals representing the independent College of Dentists, and the party advocating the dental certificate system of the College of Surgeons respectively, led reasonable men to hope that the spirit of conciliation apparent in the leading articles would result in bringing about a more healthy state of professional feeling, and that questions of policy would be discussed with fairness and in good temper, leaving it to time to determine which party had reason and justice on its side; whether the dentists of England are of importance enough, numerically and socially, to support an institution purely dental, or whether they need a written character in the shape of a certificate from a corporation of surgeons. Alas! the January number of the *British Journal of Dental Science* has dispelled the illusion. It seems that the College of Dentists is in more vigorous existence than the editor bargained for, or perhaps than he had opportunity of ascertaining, since unworthy members no longer are an incumbrance; thus the editor in January throws away the December pipe of peace and the new quill of good sense, to take up the wretched old stump whose offensive flowings of gall and vindictiveness have sputtered so long, and which have brought discredit on the journal, an action for defamation which has by this time cost the proprietors nearly £1000, and worse still, have tended to fan the flame of discord in our profession. The effusion of last month would be utterly beneath notice were it not for the fact that the journal which contains it is the acknowledged organ of a party. This being the case, the council of the college have felt bound to call upon the editor to give his authority for a tissue of barefaced fabrications published with the object of lowering the college in professional estimation. Independently of these mendacious statements—statements, I should mention, intended to convey the impression that the college consists of blacksmiths, chemists, etc., the writer again harps on his well-worn string of odiously comparing the individuals of the party he represents with the individuals of the party he tries to misrepresent; and he repeats his very stale, though not entirely original joke, about many of the originators of professional reform being "unknown to fame" prior to the establishment of the College of Dentists. What all this twaddle has to do with the real question at issue one would be at a loss to imagine, if the said twaddle did not render this one thing apparent, namely, that the PRINCIPLE *of independent action*, as represented by the college, is a wholesome principle which must sooner or later prevail, and that therefore if it cannot be attacked by any means in a straightforward way, there only remains the alternative of *abusing* those who are honestly bent on carrying it into practical effect.

In America you see the two journals published here monthly. You have also the testimony of good judges who have been among us, such as Dr. Blandy and others. Thus you can estimate impartially our doings, without being in anywise dependent on the opinions I occasionally scribble down for the DENTAL COSMOS. What I say is mere matter of opinion. The correctness of my views must be estimated from other available sources, friendly and the reverse. I make this observation because the venom of the article in the journal has extended in its aim to the humble individual who now addresses you, although, having missed its mark, without serious effect at present.

The annual meetings of the College of Dentists, and of the Odontological Society, have passed off satisfactorily.

At the college, the report of the treasurer, Mr. Robinson, showed that the receipts from all sources had been £547 2 9, and the expenses £487 9 9.

At the Odontological Society, Mr. Saunder's report showed the receipts to have been £254 2 0, and the expenses £161 14 3; but as the balance of the previous year's accounts is not included in the receipts, as with the college, there remains the large balance in hand, £407 17 6. As is well known the society has always opposed the college, and it is therefore the more pleasing to record that at the annual meeting, Mr. Harrison, the president, took occasion to observe that although he differed with the college on many points, he could not but acknowledge the value of the school it had brought into operation.

This offers a marked and pleasing contrast between the journal which represents the society and the *president* of the society; the first is a vulgar servant, the second a sensible master.

As to the estimation in which the dental certificates of the College of Surgeons are held, it may be sufficient to tell that a whole year has now nearly elapsed since they were first issued, and that notwithstanding the wise charming of the opponents of the College of Dentists, not over one hundred and thirty practitioners have been charmed toward throwing ten guineas into the coffers of the College of Surgeons.

Those who have the certificates are at a loss to know what to call themselves, as they are not connected by any ties of membership with the college. Some there are who append the letters L.D.S.R.C.S. to their names; this means *Licentiate* in Dentistry of the Royal College of Surgeons. But inasmuch as the certificate is by no means "*a license*," the title is an assumption without right. The certificate *is* "a certificate," and nothing else. There exists no such thing as a license to practice dentistry; if we were united and independent, the case might soon be made different, to the routing and confusion of the quacks who so ruthlessly fleece their poor benighted victims. The appendage to which the owners of the certificates are entitled is clearly "Certificated Dentist of the R.C.S." To imply the possession of *a license* is simply absurd.

The Metropolitan School of Dental Science prospers, and I think it will be found that the school is to furnish the College of Dentists with members likely to prove an ornament to the profession.

London, February 22, 1861.

AN ESSAY ON CAUSES OF INFLAMMATION OF THE PERIOSTEUM OF THE TEETH.

With Particular Reference to the Toxical Effects of Mercury and Phosphorus.
Submitted to the Faculty of the Pennsylvania College of Dental
Surgery for the Degree of Doctor of Dental Surgery.
Session, 1860–61.

BY DR. H. BRESLAUER, BERLIN.

The membrane of the root of the tooth, called odonto-periosteum, lines the alveoli, and continues from the socket to the root of the tooth, extending up to its neck. The periosteum is so thin and so firmly stretched over the root, that inequalities on the surface of the root can be easily seen and felt through the periosteum of a healthy and freshly extracted tooth. The firm adherence of the membrane is, in fact, owing to its close adjustment to these inequalities of the roots.

The odonto-periosteum presents, microscopically examined, no difference from periosteum of other bones, except that it is thinner and softer, contains no elastic elements, and is supplied with numerous interlacements of nerves with many thick tubules. It consists of small roundish or oval nuclei, lying closely upon each other, and appears, under a small magnifying power, to consist of a layer of broad fibres, which, however, on more minute examination, arrange themselves into uniform nuclei. At the cementum it likewise terminates with a granular layer. The vessels go through the alveoli to the periosteum of the root, and are accompanied by larger and primitive nerve-fibres. The periosteum of a root is the most simple form of connective tissue, and is the rudiment of the envelope of the dental sac, which, investing the germ of the tooth, is much thicker than (later) the periosteum of the root. It is a thin membrane, a continuation of the mucous membrane of the mouth, the further development of which has been arrested, but may take place by morbid processes. Corresponding to this peculiarity of the periosteum of the root, pathological changes may take place in the same, in a manner different from that of the periosteum of other bones.

The cortical substance of the root, which is often implicated in the diseases of the periosteum, we dismiss without further remarks, as its description does not come within the scope of this essay; it will receive our attention only there where it participates in the disease of the periosteum.

The inflammation of the periosteum is caused—

1. By inflammation of the pulp;
2. By mechanical injuries;
3. By rheumatic processes;
4. By toxical influences;
5. By diseases observed in relation with menstruation;
6. By amenorrhœa.
7. By diseases attended with dyscrasia of the blood.

The diseases affecting the periosteum of the roots of the teeth, though very different in their nature, have their common origin in the inflammation of this membrane, which, as odonto-periostitis of the roots of the teeth, is a very common affection.

The purely inflammatory stage which manifests itself by marked hyperæmia, is never observed alone; on the contrary, as soon as the affection becomes evident, and the painful tooth is extracted, an increase of the elements of the connective tissue constituting the membrane is observed—these elements increasing at first in regard to number, and later also in regard to size. The morbid process consists thus in hyperæmia, accompanied by a hyperplastic condition of the connective tissue, constituting the periosteum. (Vide Virchow's Cellular Pathology, p. 59.) It may cause all the different pathological changes to which this structure is liable, and may thus give rise to apparently new forms of disease, or may create them on the other hand, by being propagated to neighboring structures.

The hyperæmia seems, however, not to be a necessary condition for the development of hyperplastic action; it is probable that the latter may take place without the morbid process being commenced by the former; on the contrary, the affection never exists without the hyperplastic action manifesting itself. Though the vascular injection at the commencement of the morbid process may be the most striking feature, there is always a marked increase of the elements of the tissue observable, which is either uniform or appears in the shape of small tuberculated deposits within the meshes of the vessels, or limits itself to certain spots of the periosteum, especially to the apex of the root, which has a small pointed process attached to it. So small an increase in the thickness of the membrane is observed only in recent cases of the disease, where the early removal of the diseased tooth has hindered a further development of the plastic process. If the pain caused by the disease is borne by the patient, the plastic formation makes further progress, and the newly formed substance is partly free from, partly affected with hyperæmia.

The development and the course of the disease present either an acute or chronic form. This variety is, however, not attributable to a difference in the morbid processes. Only the different rapidity and intensity with which the symptoms show themselves and the termination is brought about, permit this distinction to be made, which is of some value in regard to the treatment of the disease.

After these general remarks, we proceed to the study of odonto-periostitis of the roots of the teeth, particularly as produced by the influence of mercury and phosphorus. The toxic effects which localize themselves in the cavity of the mouth manifest themselves especially by an affection of the odonto-periosteum.

(To be continued.)

PLUGGING FORCEPS.

BY J. D. WINGATE.

This is one of the most useful operating instruments in the possession of the dentist; yet, strange to say, it is condemned, by many, as unsafe, on the ground that frail teeth are liable to be crushed, or the enamel fractured of those not so frail. With the same propriety, it might be argued that the plugger is unsafe; by it a tooth may be pushed out of its socket or driven into the maxilla. But to use no more force with the forceps, than is used in condensing with the instrument intended for that use, a filling may be condensed with ease to the operator; allowing him to relax his muscles, which in filling, are usually taxed to a great extent in guiding and keeping the instrument in its place, and to prevent slipping. It is also easier and more agreeable to the patient than the ordinary condenser. This, however, is not to excuse the operator's properly packing the gold, as the cavity is filling up. A poorly inserted filling should be condensed from the bottom of the cavity outward; for this an excavator serves a good purpose; and no filling should be left remain, unless the operator has a reasonable hope of its accomplishing the object for which it was inserted.

To Dr. J. D. White I am indebted for my first practical introduction to this really useful instrument. He made important improvements on the old style of plugging forceps. On showing to him a set I had procured, he could hardly tell what they were made for, and thought that they would do almost as well for anything else as for condensing fillings. Afterward I had the good luck to get a set, that he himself had filed up.

These I have had in use now upwards of five years, and expect them to last as long as I practice dentistry. The condensing beaks of these last are slightly curved, so as to act on the principle of an arch; the point requires to be thin enough to enter very narrow spaces in condensing lateral fillings.

To fill a set of teeth properly, I would wish for a set of keen-edged, well-adapted excavators, files, pluggers, plugging forceps, burnishers, and a sufficient quantity of Jones & White's unequaled gold foil.

Bellefonte, February 20, 1861.

TO THE PROFESSION.

At the meeting of the American Dental Association, held at Washington, D. C., July, 1860, the undersigned were appointed a committee "to confer with dental practitioners throughout the Union, with a view to the formation of local societies."

In the discharge of this duty the most feasible plan that suggests itself to us for laying the matter before the profession, is to take advantage of the facilities afforded by the dental journals.

We would respectfully suggest it to be a self-evident fact recognized by every reflecting mind, that innumerable advantages must accrue to the individual members as well as to the profession at large, by associated effort. Nothing is better calculated to break down local jealousies; to establish in their place agreeable and fraternal relations; to foster a desire for individual improvement, and beget that *esprit de corps* which wherever it exists has a tendency to elevate the character and standing of any profession. Taking this broad view of the matter, it is deeply to be regretted that our profession should not have had its local societies established long since in every State and town of any size in the Union.

It is, however, gratifying to observe (and we take pleasure in recording the fact) that within the last year and a half a number of local associations have been formed, and we have reason to believe that the movement in favor of a national delegated association has had much to do with the organization of these societies. We trust their example will be followed by the profession in other sections of the country.

Having been appointed merely to confer with the profession on this subject, and as we have directed attention briefly to the advantages of associations, we do not feel it necessary to offer any further suggestions.

Trusting that the profession will feel the importance of acting promptly in this matter, we shall be happy to afford any information and assistance in our power that may be desired.

Committee,
J. W. Van Osten, Philadelphia, Pa.
W. W. Allport, Chicago, Ill.
W. Muir Rodgers, Shelbyville, Ky.

PROCEEDINGS OF DENTAL SOCIETIES.

PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

REPORTED BY GEO. T. BARKER, D.D.S.

A MONTHLY meeting of the Association was held on the evening of March 12th, 1861, at eight o'clock.

President, Dr. Dillingham, in the Chair. Present, Drs. Buckingham, Fitch, McQuillen, Flagg, Peirce, Vanderslice, and Barker. The subject for discussion was stated by the President to be

THE NEW PLASTIC MATERIALS FOR FILLING TEETH.

Dr. Flagg said that the subject, as proposed by him, was not exactly as stated, but was the "consideration of the so-called *osteo*-plastic materials for filling teeth," and to this he would speak. He had, for many years, been as forcibly impressed as any one of the great value which would appertain to an article which could be introduced into cavities in teeth without the amount of mechanical irritation, and the expenditure of time, both to patient and operator, which was absolutely necessary to insure the production of a good foil plug. Up to the present time, he regarded gold foil as the most generally reliable material which was employed for this purpose, especially in difficult and approximal cavities. In favor of this foil could be urged, the one consideration of the large per cent. of durability and consequent usefulness of *well-performed operations;* while, on the other hand, there were the objections of color, expense, consumption of time, fatigue incident to manipulation, requisite dexterity, danger of accidents, either from breaking or slipping of instruments in the employment of necessary force, the apprehension of patients resulting therefrom, and the mechanical irritation incident thereto. He thought that, at the present day, the mere dexterity of that portion of the mechanical manipulation of filling teeth, which was expended in the proper placing, consolidating, and burnishing of the gold, could be considered as but a very small part of the requirements for an educated dentist; and yet, in spite of this, held that *the ability to do it was indispensable to successful practice.* Considered that the proof of the ease with which, by competent instruction, the art of plugging teeth in the best possible manner could be acquired in a comparatively short space of time, existed in the mouths of patients who were presented every year to the incumbents of the chairs of operative dentistry in our dental colleges, by students who had been engaged in filling, for certainly not more than two or three years, and many of whom had derived the most of their experience during the eight months of attendance upon patients, while lectures were in progress. Had seen specimens from such hands, which would have been, in the highest degree, creditable to Hudson or Townsend, or any other recognized proficient in this department. But, at the same time, would ask any of the gentlemen, if cases were not constantly presenting, where, from the injudicious insertion of excellent fillings into improperly treated teeth, any amount of agony was inflicted upon confiding patients; any amount of impotent effort for the relief of suffering, expended by general practitioners of medicine; and any amount of valuable dental organs sacrificed to the deplorable ignorance of pretenders, who conceived the practice of dentistry to consist only of stuffing gold solidly into a hole, and the general breaking off, and the occasional pulling out of teeth?

With these views, he had, while regarding with much caution the plastic materials which have been successively offered to the profession, neither seized with avidity anything which promised much upon the "say so" of its inventor, nor condemned untried any of the compounds, *because* they were sneeringly termed "putty fillings." Thus far, his experience in the use of osteo-plastic materials had extended to Pearson, Kellnitz, and Roberts's preparations. He had used them, following directions as faithfully as he could, and with an earnest desire to produce the best results, and after eighteen months' trial, had concluded that none of them could for a moment be thought of in comparison with gold. He would not say that their entire substitution for that article had been suggested by their inventors; but, with his views as already expressed, desired to contrast them with that which he considered, as yet, the best plugging material. He had commenced manipulating with each article, at first entirely regardless of teeth, with the object of testing the consistency of mixture, the hardening qualities, both dry and under water, the time required, etc.; and next practiced filling teeth in the hand, to arrive at their working qualities; but, lastly, introduced them into actual service as the only trial which could decide anything as to their action upon living teeth, and their permanency under the action of the fluids of the mouth, and the attrition of mastication. In every direction of experiment, he thought it due to the "os-artificiel" of Dr. C. H. Roberts, that it should be decidedly placed as No. 1; and, at present, had discarded the others, but was still occasionally using that article. Thought, however, that it was not much to claim for it, that it was better than a "badly made gold-filling," and that it was entirely *too much* to claim for it, that it was better than tin foil; or, in very many cases, better than amalgam, inasmuch as years had proven the latter to be possessed of, at least, one all-important qualification, viz., durability. He wished to state, that he had found difficulty in so filling approximal cavities, as to have the plug remain perfect at that point nearest the gum; and had experienced much softening and washing out of the material, even when he thought he had at first succeeded in this particular. Would not positively accuse the material of being in fault, but was willing to admit the excuse of imperfect manipulation, or non-success in "keeping dry," or whatever reason might be advanced; but merely stated the fact as coming under his observation. Had placed the material in six teeth, which were cases of *almost absolute* exposure of pulp, and the result was, the death of every pulp, with more or less suffering, and in a longer or shorter space of time, varying from one day to three weeks, dependent upon temperament; thought that in this particular (tendency to irritation) the preparation of Dr. Roberts was much less objectionable than either of the others.

Had observed, in filling into pulp cavities, that much pain ensued; regarded it due to the fact that the mouths of tubuli, whose peripheries approached the periosteum, had been stopped with a material possessed of irritating qualities. Considered that he had demonstrated the truth of his position, by the results which he had obtained from introducing prepared gutta-percha to that extent, which prevented such tubuli from being brought into contact with such irritant; results which were perfectly satisfactory, there being *entire absence of pain.* Had used the material in four cases of very superficial decay, accompanied with unusual tenderness; thus far, with success, the longest duration being five months. Could not say that he had ever met with that *chalky condition* of tooth substance, which he had heard some say would occur as the result of using osteo-plastic preparations. Had filled several badly decayed teeth with the requisite large amount of material, some of which he had kept dry, and some moist, without being able to discover any perceptible change as to solidity of structure. Had seen many fillings from the hands of other gentlemen, in as worthless condition as were the majority of his own, and, as yet, had seen but two that looked as well as the best results of his own labors; these were both in positions exposed to very little attrition, (the lateral face of upper left second bicuspid, and the labial face of upper left central incisor.) Regarded Roberts's os-artificiel as useful—1st. In filling sensitive superficial cavities in positions not exposed to much attrition, for as long a time as it would last. 2d. In filling incisors, canines, and bicuspids, which were *really* too much decayed to admit of a *serviceable* gold filling, and in which the tooth discoloration from amalgam was of course very objectionable; the fangs of such teeth to be filled with foil, and the pulp cavities with foil or gutta-percha. 3d. In filling the greater part of large cavities in molars, when it was proposed to fill externally with gold, and where expense or consumption of time was an important consideration to the patient; or where subsequent trouble from excessive mechanical irritation was feared by the operator.

Dr. McQuillen remarked that his experience with these agents had been quite limited, as he always felt considerable hesitancy about introducing substances in the mouths of his patients, when he was unacquainted with their chemical composition, and uncertain what effect they might have upon the teeth. He cited several cases, however, in which he had used it.

The *first*, introduced in the approximal surface of a right upper bicuspid, for a fellow-practitioner, about a year and a half ago, was in a good condition when he last saw it.

The *second*, inserted in a large cavity in the grinding surface of a left lower molar, was either worn out by the trituration of the antagonizing tooth above, during mastication, or it was softened and washed out by the saliva; for, at the expiration of a few weeks, the patient returned with the least imaginable portion of the filling remaining.

The *third*, inserted in the labial and right approximal surfaces of a right upper lateral incisor, was quite unsuccessful, as it softened and washed away in the course of a few weeks; a second attempt proved equally futile. In each of these cases, the secretion of saliva was quite profuse.

After citing other cases, with varying success, he directed attention to the employment of these preparations in deciduous teeth, and remarked he had employed them more frequently in these teeth than in the permanent ones; and thought if these agents were free from ingredients which would exert an injurious effect upon the teeth, that they would prove quite valuable, as their use obviates the necessity of pressure.

This was a point, however, on which he desired reliable information. He had supposed (and in the course of a recent conversation with two of his fellow-practitioners, had found they coincided with him in the opinion) that even if the fluid employed was an acid, by combining with the powder, (which he inferred to be mainly composed of alkalies, or alkaline salts,) a compound would be formed, which would prove inert, so far as any action upon the teeth was concerned.

Determining to test this matter, he had, just before coming down to the meeting, found on dipping *litmus paper* in the fluid of Dieffenbach's preparation, that the paper turned *red;* and, on mixing the fluid and powder together, and then allowing the preparation to harden, he discovered, on crushing the mass and moistening it with water, that the same result was obtained on applying the litmus paper—*it turned* red.

Dr. McQuillen repeated these experiments in the presence of the Association; and, on subjecting Pearson, Roberts, and Dieffenbach's preparations to this test, the same result was obtained in each instance. He remarked that he would not pretend to account for this phenomenon, as his object was merely to direct attention to facts. He desired, however, to be informed whether this reddening of the litmus paper was due to the presence of acids; and if so, whether it was not probable, when the osteoplastic fillings granulated, and were washed out of the cavities, and became mixed with the saliva, it would produce such a change in that fluid as to exert a deleterious influence upon the teeth? He was free to confess that these results made him look upon such preparations with grave doubts as to their being safe and reliable agents for filling teeth.

Dr. Dillingham commenced using the osteo-plastic material about eighteen months since, and was, at first, much gratified with it, and considered it a valuable article; but, in nearly every case that it was used, it remained but a short time—usually before four months had elapsed becoming soft and useless. In introducing it, he found that the longer the saliva could be kept from it, the better the filling would be; but now, does not use the material except as a temporary filling. He used the preparation referred to by Dr. Flagg as Kellnitz's.

Dr. Barker had used the Kellnitz preparation with much the same success as the President; but was not prepared to discard all the other preparations because of his failure, as he considered them useful, even if the fillings would not remain for a very great length of time. Under certain circumstances, the material was exceedingly well adapted, even if a new filling had to be introduced every six months or a year. He had recently met with such a case; a superior first bicuspid tooth was decayed, upon both the anterior and posterior approximal and the grinding surface, with nerve exposed; the pulp was removed, and the pulp cavity filled with gold, but the tooth was so frail that he considered it impossible to introduce a gold filling. He therefore introduced Roberts's os-artificiel preparation; but, as it was done recently, was not prepared to say with what success.

Dr. Buckingham said he had, some time ago, tested several different specimens of osteo-plastic material, and had found them all nearly alike in composition. He had made some from a receipt that Dr. Forbes, of St. Louis, gave at the Dental Convention at Niagara, viz., nine parts oxide of zinc, one part fine borax, and two parts fine silex. These were carefully mixed together and kept dry. The fluid was chloride of zinc, that had deliquesced with a little soluble glass in it. He did not think the soluble glass was necessary, as he had made some without it, which became as hard as any having it in. He had also made the fluid by dissolving zinc in muriatic acid until the acid was saturated, and then evaporating it to half its bulk.

It is necessary to have the fluid strong, or the paste will not set. Care should also be taken in procuring the oxide of zinc, as most of the oxide that is kept for sale is very impure. When the paste does not set as quickly as required, the oxide should be heated in a crucible, which will make it set much quicker. He thought every dentist, by trying a few times, might make as good a paste as any in the market, at a cost of about twenty-five cents per pound. He knew it required as careful manipulating as it did for any other material, to work it to the best advantage; and had seen cases where it had been put into teeth in the most careless manner. Under such circumstances it could be of little benefit; but he was not prepared to say, where it was used properly, that it could be relied upon as a permanent filling, as he had seen no cases where it had been long introduced. He had used it in his own practice in but one case, where it was intended to be allowed to remain; in that case, it still appeared to be doing very well. He had used it for a temporary filling in several teeth, where the dentine was so sensitive it was impossible to excavate them; in these, he let it remain from three or four days to as many weeks, when the sensibility would be so much diminished as to allow them to be excavated without much pain; but he did not use it where the nerves were exposed. In such cases, he always destroyed the pulp, and then filled up the pulp cavity with gold.

Dr. Vanderslice referred to his experiments, some six years since, with the material that is now sold under the name of Hill's stopping. He made it, by dissolving gutta-percha in chloroform, mixing it with silex, and then boiling it until the mass would sink. Condemned it, however, because it would shrink, and could not be made to adhere to the walls of the cavity. For temporary purposes, now uses a filling of cotton, dipped in gum mastic that has been dissolved in alcohol.

Drs. Peirce and Fitch referred to several interesting cases.

The subject of

AMALGAM

was chosen for next discussion.

ALUMNI OF THE PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

BY D. H. GOODWILLIE, D.D.S.

THE annual meeting of the Alumni of the Pennsylvania College of Dental Surgery was held at the college building, on commencement day, February twenty-eighth. After the roll was called, and the reading of the minutes of the last meeting, the following officers were elected for the ensuing year:—

President.—DR. GEO. T. BARKER.

Vice-President.—DR. THOS. C. STELLWAGEN.

Secretary.—DR. D. H. GOODWILLIE.

Treasurer.—DR. H. Y. PICKERING.

Librarian.—DR. WM. G. WILLISTON.

The following gentlemen were elected essayists for the next annual meeting of the Alumni: Drs. C. E. Latimer, James Goodwillie, and Chas. Peacock.

When these preliminaries were gone through with, an interesting discussion was had upon the liability to decay of the teeth of different nations, and the probable cause.

At this meeting there was a large number added to the Alumni, which, it may be stated, is in a very encouraging condition, and our hopes for the future prosperity of our Alma Mater are very high; let us prove ourselves worthy of her.

DENTAL COMMENCEMENT.

BY G. T. B.

The annual commencement of the Baltimore Dental College was held in Baltimore, on the evening of the twenty-sixth of February, at the New Assembly Rooms, in the presence of a large and fashionable audience.

The exercises consisted of prayer, music by Vollandt's band, the conferring of degrees, and the delivery of the Valedictory.

The degree of "Doctor of Dental Surgery" was conferred upon the following named gentlemen, twenty-nine in number, by Professor Thomas E. Bond:—

Ambrose Barcroft,	Pa.
Charles R. Boteler,	D. C.
Henry T. Campfield,	Ga.
E. Stephen Carter,	Ill.
Marx E. Cohen, Jr.,	S. C.
Charles John Curtis,	Eng.
Edwin C. Edwards,	Va.
Alfred Henry Fuchs,	Prussia.
James H. Harris,	Va.
Samuel W. Heald,	Md.
James Henry Hill,	D. C.
Wm. Henry Hoffman,	N. C.
James Bond Littig,	Md.
Matthias Martin,	Md.
Francis M. McCorkie,	N. C.
Henry C. Parmly,	N. Y.
Samuel P. Parmly,	La.
Alexander H. Read,	Ga.
Charles Edw. Roberts,	Md.
William R. Seabrook, Jr.,	S. C.
Benjamin R. Seale,	Ala.
Luther D. Shepard,	N. H.
James H. Spainhour,	N. C.
George Wesley Stine,	Pa.
Jasper E. Stucksy,	S. C.
A. Washington Talley,	Va.
William M. Walker,	S. C.
William P. Welsh,	Md.
George Wright,	N. Y.

The charge to the graduating class was delivered by Prof. A. Snowden Piggot, and is spoken of as an exceedingly well-written production.

We learn that the class in attendance, though not quite as large as the one of the previous session, numbered fifty-eight students.

We are glad to see, and consider it a subject for congratulation, notwithstanding the unsettled and unquiet condition of our country, that dental and also medical schools have never been in a more prosperous condition than at present, and are giving the best evidences of continued usefulness. Upon an examination of the number of students in attendance and of those graduating in some of the most prominent institutions of our own city for the past session, we were surprised to see that they outnumbered those of any previous year. We present below the classes of some of these institutions:—

	Matriculants.	Graduates.
University of Pennsylvania, (Medical Department)...	460	175
Jefferson Medical College..................................	443	160
Pennsylvania Medical College..............................	70	38
Pennsylvania College of Dental Surgery................	63	36
Philadelphia College of Pharmacy........................	121	41
	1157	450

EDITORIAL.

ANSWERS TO CORRESPONDENTS.

It would give us great pleasure to sit down and answer in detail all letters which we receive, from time to time, making inquiry into the various departments of our profession, but time will not allow. It is a source of great pleasure to know that so many in the profession are anxious to be right, as far as in their power lies, before they incautiously plunge into operations. For want of a proper knowledge of the treatment of children's teeth, many dentists have and still are doing more harm than good in that direction every day. They commenced wrong, and will stay so, rather than adopt anything new, or change old notions founded on a limited or false construction of the laws of the economy. This remark is made from the fact that nearly all the cases of irregularity of the teeth of children which we attend to have been produced by the intermeddling of dentists, or in cases where, from neglect or uncontrollable causes, teeth have decayed and fallen out prematurely. It is the duty of every dentist to enlighten his patients in time of the importance of preserving the deciduous teeth where they are disposed to decay, not merely to prevent pain, but for the future benefit of the mouth of the patient. The utility of plugging first teeth does not end with the shedding of those teeth. In aiding the proper development of the mouth, its advantages are felt during the lifetime of the patient. No mouth develops properly if a single tooth be lost in early childhood. Many parents remark, it is hardly worth while to plug the first teeth, they will soon fall out; but we will say, that is not the more important question. It is the influence it has on the future welfare of the mouth. Of course the dentist is daily called on to extract the teeth of children, because they seem to be crowding when the second set first commence making their appearance. It is at this point that the mischief generally commences; the teeth are extracted on account of the irregular condition of them at the time. This is, as a general rule, wrong; what appears irregularity in the first stages of eruption will disappear as the mouth grows. We cannot discuss this interesting and beautiful subject here in the limits of this paper, but give answers to the following letter, received a short time since, as well as we can.

"Dr. J. D. White.

"Dear Sir:—Will you be kind enough to advise me? A child four years old presents with first right superior molar nerve dead, some inflammation, and occasional pain. Would you extract, considering the lapse of time before the eruption of the permanent teeth? The superior incisors are decayed to the gum, abscesses being formed at the apex of each root. Please tell me how you would proceed in each case."

In answer to the first question, we would say that we never extract a tooth at four years of age for occasional pain; after an abscess once forms, the subsequent pain is never severe. When pain does ensue, we open the canals of the roots, to give vent to the gases or whatever may be there, and apply a little laudanum on cotton to the tooth and gums. If an opening has formed through the gum, and the crown of the tooth is reasonably good, we treat the case a few days with creosote, and fill it. In those cases we do not fill the fangs, only the larger portion of the pulp chamber. We have specimens of teeth which have been plugged in this way, and the roots have become absorbed as the permanent tooth advanced, as though the nerve had not been dead; the outer covering of the roots carry them away. Such a tooth remains in a less morbid condition with a good plug than containing the fluids of the mouth or particles of food. Besides, chewing over it forces the air and fluids into the canals of the roots, and in this way helps to keep up or excite irritation of the external membranes. If an opening has not formed in the gum, we treat the case as we would an adult tooth, and plug it. If inflammation sets in, and is severe, we remove the plug; but this seldom happens. Sometimes we give the parents a small probe, and instruct them how to free the tooth from impacted food and to fill the tooth with cotton and laudanum, as the case may require, and let the tooth decay away, even if it does cause it be very severe. We regard that as preferable to extraction, unless occasional pain. We cannot recollect when we have extracted a tooth of the first set for pain, so readily are such cases treated.

The injurious results of extracting the class of teeth referred to, are when the first molars of the second set are erupting. They topple over the "caps" of the bicuspids, and cause them to make their appearance out of the arch on the lingual and palatine side.

In regard to the superior incisors decayed off even with the gum, it makes no matter. The roots of those teeth support the arch as well as the whole tooth, and the abscesses are only a source of annoyance rather than pain. It sometimes happens that the points of the roots protrude through the gum, and cause quite an ulcer or wound in the lip. We do not extract a root or roots for this. We file them off, or with a cutting pliers, similar to those used by jewelers, reduce them even with the gum, to prevent irritation of the lip. Sometimes in these cases the gum heals over; if not, it results in no harm.

A little child of four and a half years old was presented, about a month ago, with the whole four front incisors decayed to the gum, and every root projecting through into the lip, causing considerable swelling. We cut them all away even, or rather a little below the surface of the gum.

We saw the case a few days since, and the swelling had subsided, and the wounds in the lip had entirely healed.

We have been following this practice about eighteen years, and in many instances in adults. We have some time since directed attention to it, but perhaps it never met the eye of our correspondent. We have a number of letters on other subjects, but our business duties are so pressing, that it is impossible to answer them as we would wish. It is onerous to discharge the limited duties we owe to the DENTAL COSMOS, and it will doubtless be observed we devote all our space in the journal to practical matter, as we have long since believed that that was the most important thing we could do for the wants of the profession, and the best way to answer correspondents; and we hope it will be an excuse for not replying to many who, from time to time, have written to us on various subjects. J. D. W.

DENTAL INSTRUMENTS.

THE inferior quality of the steel and the imperfect structure of a large proportion of the instruments made for the dentist, have been for a long time subjects of such universal complaint, that one would suppose every manufacturer would have made such efforts to remedy this difficulty ere this that no reasonable grounds could exist for further complaint. Unfortunately, however, such is not the case; for on examination they are generally found, in place of being made from the *very best steel,* to be of an inferior quality; and, so far as the shapes are concerned, one could really do as good or better work with the mythical ten-penny nail, with which, it is said, that a good operator can fill a tooth. That this difficulty can be remedied is unquestionable. The natural query is, how? With no disposition to enter into details, we would remark in general terms, that the dental practitioner should *care less* about pearl, conch-shell, and ivory handles, and *more* about the *steel* that enters into the composition of his instruments. Indeed, we have sometimes regarded it as a misfortune that pearl and conch-shell handles were ever introduced as part and parcel of excavating and plugging instruments; for, much as they may excite the curiosity and admiration of unsophisticated patients in rural districts, as a general thing the manufacturer exhausts his skill upon the handles, while the shape and temper of the points are no better, if as good, as the ordinary steel-handled instruments. For our own part, we vastly prefer the latter to the former.

Regarding first quality steel therefore as a desideratum, the manufacturer, if he does not desire to be deserted by the profession, should not (as is asserted by reliable authority, and as the character of the instruments prove in the most conclusive manner) content himself with an inferior article because it can be procured at a lower price than the finest quality. Having obtained the steel, the construction of the instruments, particularly *pointing* and *tempering*, should not be left to half-grown boys, but be placed in the hands of competent and *superior* workmen; and sufficient time should be spent over them to insure perfection of form and temper, for a man had better make but one good instrument than a dozen poor ones.

Much of this difficulty, we believe, is attributable to the fact, that very many dentists are not disposed to pay a good price for instruments; in other words, if two lots are offered for sale, the cheaper is often selected, with the knowledge that it is the poorest: thus, not only offering an encouragement, but actually compelling manufacturers to present an inferior article. This is all wrong, and it is the poorest kind of economy to save on instruments; a fair, a liberal, or even a high price had better be paid and secure superior ones. The facility of manipulation, the perfection of operations, and the durability of the instruments will more than compensate for an extra price.

Proposing to resume this subject on a future occasion, we would direct attention for the present to the article on New Zealand steel, in the review department, trusting, if all that is claimed for it should prove reliable, we may be supplied with instruments which in point of temper and durability will equal the far-famed Toledo blades.

J. H. M'Q.

ASSOCIATIONS.

In compliance with the request of Dr. Van Osten, we would direct attention to the address presented on another page by the committee appointed by the American Dental Association to confer with the profession, on the expediency of forming Societies in sections of the country where as yet they have neither a "local habitation or a name."

The combination of a number of individuals for the express purpose of advancing science by their united efforts, of learning its progress, and of communicating new discoveries, may be justly regarded as one of the most remarkable features of modern times. In this movement the dental profession in some sections have participated for a long period; and those members of it who have enjoyed such advantages for years, on making a retrospective glance of the past, not only can recall how such associations have stimulated them to acquire a deeper and more extended knowledge of science, special and collateral, but also numerous valuable and practical suggestions which they and their patients have been largely benefited by, and very many happy hours passed in social intercourse with their fellow-practitioners which have resulted in the establishment of fraternal relations that death alone can sever.

Whatever difference of opinion there may be with regard to the proper basis for a National Association, it is difficult to conceive how any legitimate or reasonable objections can be urged against the establishment of local societies in every town of any size in the country, while many solid and convincing arguments might be advanced in their favor.

J. H. M'Q.

REVIEW OF DENTAL LITERATURE AND ART.

BY J. H. M'QUILLEN, D.D.S.

Nutrition of the Teeth.—In the course of an ably written essay, (published in the *Dental Register of the West,*) on the above subject, read before the *Michigan Dental Association* by its author, S. C. Chittenden, he remarks :—

> "For the last twelve years, my practice, to a great extent, has been among the Scotch, whose staple article of diet, at least for breakfast, is unbolted oatmeal. I have found that the teeth of children brought up on this food are erupted with very little difficulty, are less liable to decay in childhood, and, from the fact that they are retained in the mouth till the absorbents have carried the fangs away, the second set are more regular and more fully developed than the teeth of the natives of this country. Are they not indebted to a great extent for their fine teeth to their manner of living? Now, if such be the case, ought we not to use our endeavors to induce parents to give their children such food as will tend most to bring about the desired result? Shall we not have earned the heartiest thanks of the rising generation."

In connection with this subject, we would, as additional evidence of the influence of diet upon the dental organs, and also of the provision that is made by nature to procure and prepare the food in certain classes of the animal kingdom, direct attention to the dental apparatus of the parrot fish, (*scari,*) a beautiful specimen of which was presented to us, some time back, by Dr. Nones, of Wilmington, Delaware. These fish inhabit the warm waters of the torrid zone, particularly the Gulf of Mexico, and feed on the *lithophytes*, or *gelatinous polypi*, which are said by Prof. Owen to "clothe as with a richly tinted carpet the bottom of the sea." The slightest touch causes the irritable bodies of the polypi to retreat into their strong shells. The *scari*, therefore, is supplied with a dental apparatus to break open and crush these stony tenements so as to get at the inclosed gelatinous mass. The jaws, shaped somewhat like a parrot's bill, (hence their name,) are prominent, short, stout, keen on the edge, and *externally dense in structure;* in addition to this they have movable pharyngeal bones, (supplied with teeth,) which close the posterior aperture of the mouth. The arrangement of the teeth on these bones constitutes the most beautiful and *densely* tesselated pavement that can be imagined. With such a formidable armament, which no doubt is moved by powerful muscles, it can be readily conceived that the shells would be ground to a fine powder. A large proportion of the calcareous constituents of the shells are unquestionably swallowed by the fish along with the gelatinous food, and no doubt contribute much to the density of the dental apparatus; for Mr. Chas. Darwin—who accompanied Captain Fitzroy, R. N., as naturalist and geologist, on board of the ship Beagle, in the circumnavigation of the world—caught several, and, on dissecting them, found the intestines laden with nearly pure chalk. Apparently overlooking the part such elements play in the nutrition of the osseous and dental tissues, he merely saw in this evidence to authorize him in ranking the parrot fish as geological agents in converting the hard shells of the lithophytes into chalk.

In these instances we have presented striking illustrations of the influence diet has upon the structure and integrity of the dental organs; and when it is remembered that Chosat, by restricting animals to food containing little or no *phosphate of lime*, succeeded in producing an artificial softening of the bones, the most conclusive evidence is afforded that too much attention cannot be paid to this subject by the dental practitioner, and those persons who desire to give either their own or their children's teeth a fair chance to withstand the casualties to which of necessity they will be subjected; for the same influences which would modify the nutrition of the osseous system would also control or affect the operations of the same function in the dental organs.

British Journal of Dental Science—January.

"New Zealand Steel.—Ever since the settlement of New Zealand by Europeans, their attention has been daily called to the peculiarities of a kind of metallic sand along the shores of New Plymouth, in Taranaki. This sand has the appearance of fine steel filing, and if a magnet be dropped upon it, and taken up again, the instrument will be found thickly coated with the iron granules. The place where the sand abounds is along the base of Mount Egmont, an extinct volcano, and the deposit extends several miles along the coast, to the depth of many feet, and having a corresponding breadth. The geological supposition is, that this granulated metal has been thrown out of the volcano, along the base of which it rests, into the sea, and there pulverized. It has been looked upon for a long time as a geological curiosity, even to the extent of trying to smelt some of it; but, although so many years have passed since its discovery, it is only recently that any attempt has been made to turn it to a practical account; in fact, the quantity is so large that people out there looked upon it as utterly valueless. It formed a standing complaint in the letters of all emigrants, that when the sea-breeze was a little up they were obliged to wear veils to prevent being blinded by the fine sand which stretches for miles along the shore. Captain Morshead, a gentleman in the west of England, was so much impressed with its value that he went to New Zealand to verify the reports made to him in this country, and was fortunate enough to find them all correct. He smelted the ore first in a crucible, and subsequently in a furnace; the results were so satisfactory that he immediately obtained the necessary grant of the sand from the government, and returned to England with several tons for more conclusive experiment. It has been carefully analyzed in this country by several well-known metallurgists, and has been pronounced to be the purest ore at present known; it contains 88·45 of peroxide of iron, 11·43 of oxide of titanium, with silica, and only 12 of waste, in 100 parts. Taking the sand as it lies on the beach and smelting it, the produce is 61 per cent. of iron of the very finest quality; and, again, if this sand be subjected to what is called the cementation process, the result is a tough, first-class steel, which, in its properties, seems to surpass any other description of that metal at present known. The investigations of metallurgical science have found that if titanium is mixed with iron, the character of the steel is materially improved; but, titanium being a scarce ore, such a mixture is too expensive for ordinary purposes. Here, however, nature has stepped in and made free gift of both metals on the largest scale. To give some idea of the fineness of this beautiful sand, it will be enough to say, that it passes readily through a gauze sieve of 4900 holes or interstices to the square inch. As soon as it was turned into steel by Mr. Musket, of Coleford, Messrs. Moseley, the eminent cutlers and toolmakers of New Street, Covent-garden, were requested to see what could be done with the Taranaki steel They have tested it in every way, and tried its temper to the utmost, and they say the manner in which the metal has passed through their trial, goes far beyond anything that they ever worked in steel before. It has been formed into razors, scissors, saws, pen-knives, table cutlery, surgical instruments, etc., and the closeness of the grain, the fineness of polish, and keenness of edge, place it in the very foremost rank—almost in the position of a new metal. Some silk-cutting tools have been made, and so admirably have they turned out, that one particular firm will in future have no others. In the surgical instruments, the edges have been examined by the microscope, and have stood the test in keeping the superiority. A number of gentlemen interested in such matters have called at Messrs. Moseley's, and have taken various articles of this steel away for the purpose of trying it. It is stated to possess peculiar advantages for gun-barrels and boring-cutters for ordnance purposes. As far as is at present known of this extraordinary metal, it bids fair to claim all the finer classes of cutlery and edge-tool instruments to itself, so well has everything made from it turned out. Messrs. Moseley, in whose hands the sole manufacture of cutlery and edge-tools is vested for this country, have placed a case, filled with the metal in all its stages, in the Polytechnic Institution. There is the fine metallic sand, some beautiful specimens of the cutlery made from it, and the intermediate phases of the iron and steel. An official experiment is expected to be made at some of the government establishments shortly, and it is also intended to forge some chain cables, anchors, etc., in order to fully set forth the great superiority of the Taranaki iron."—(*The Australian Mail.*)

DENTAL REVIEW, LONDON—JANUARY.

"ATRASIA ORIS.—Many cases of the disease atrasia oris, or closure of the mouth, present themselves to the notice of those attending the medical charities of Calcutta. It would appear that there are two forms of this disease: one in which the mucous membrane covering the front of the ramus of the lower jaw has been inflamed, and, subsequently contracting, causes closure of the teeth, without narrowing, to any considerable degree, the opening of the lips. If the history of these cases be traced, it will be found that they have generally resulted from the cutting of the last molar or wisdom tooth, having caused the gum to inflame. The other kind of closure of the mouth results from the indiscriminate and excessive use of mercury by native practitioners. The ulceration of the mucous membrane lining the gums and cheeks succeeds to the ptyalism so produced, and, on the inflammation subsiding, the opposed ulcerated surfaces unite and cause the jaws to be closed, and the opening of the mouth to be contracted. Both Dr. Fayrer and Dr. Partridge are accustomed to remedy the first accident in the same manner, by dividing the firm contracted band of mucous membrane with a knife, (one of the tenotomy knives is generally found to be most convenient,) and then forcing open the jaw by an extending trivalve speculum. With a little attention to dressing, this plan generally succeeds. In the other species of atrasia oris a similar plan was at first adopted. The adhesions were divided by a narrow knife, the jaws forced open by the speculum, if necessary, and lint dipped in oil was pushed in to separate the recently-cut surfaces. But the disease treated by this way alone had so great a tendency to relapse, that in the recent case, Dr. Fayrer, in addition to the above, divided the skin at the angles of the mouth in a direction downward and outward; and though at first this occasioned a most lachrymose expression to the man's countenance, it ultimately perfectly succeeded, and he left the hospital cured."—(*Indian Lancet.*)

"CEMENTATION OF IRON.—The process by which iron is converted into steel generally consists in making it combine with a small quantity of carbon; and very frequently, owing to the brittleness of steel when tempered to the highest degree, it is desirable to give the qualities of steel to the surface only of a bar of iron. This is done by inclosing it in a box of sheet-iron, filled with charcoal-dust or horn-shavings, tallow, etc. Here the question naturally arises, whether carbon combines with the metal under a solid form, which is scarcely admissible, or else is absorbed in the shape of some carburetted gas; and, in the latter case, it is useful to know what gas is generated in the process. On this subject M. Caron has just addressed a paper to the Academy of Sciences, in which he describes several experiments of his, to show that the cementation is owing to the formation of a cyanide, cyanogen being, it is well known, a compound of carbon and nitrogen. Having filled a porcelain tube with fragments of charcoal surrounding a bar of iron, and exposed it to the heat of a reverberatory furnace, he successively caused hydrogen, oxide of carbon, azote, air, pure carburetted hydrogen, etc., to pass through the tube, but could not, after a two hours' fire, obtain any degree of cementation. But the case was far different when he made a current of dry ammonia pass through the tube; in that case the cementation was effected rapidly and easily; after being exposed to the fire for two hours, the bar of iron being immediately tempered, then hammered to make the grain closer, and then tempered once more, proved, on being broken, to have been cemented to a depth of two millimetres. This result M. Caron attributed to the formation of the cyanide of ammonium, and further experiments confirmed this idea. M. Caron, then, in order to obtain cyanide of potassium in his tube as a cementing agent, let his charcoal soak in a solution of carbonate of potash, and the experiment succeeded beyond expectation. In the same manner he obtained excellent cementations by employing soda, barytes, and strontian, under the influence of a current of air. Hence, he shows that all the various nostrums used in metallurgy for cementing iron owe their efficacy to the formation of cyanides."

"ARREST OF DEVELOPMENT IN THE INFERIOR MAXILLARY BONE.—At a recent meeting of the Pathological Society of London, Mr. Canton related an interesting case which occurred in a girl, aged sixteen. The development had ceased at the inferior dental foramen; the upper half of the perpendicular ramus was consequently wanting. Associated with this deformity was an absence of the bony portion of the auditory meatus, the glenoid cavity, and the zygomatic process of the temporal bone. The external ear was small, misshapen, and placed considerably in advance of its normal position. The corresponding side of the lower half of the face was much flattened, and the chin receded so as to give the countenance somewhat of an idiotic expression. Mr. Canton thought the preparation interesting, as corroborating the views of Kölliker and Tomes with respect to the development of the perpendicular ramus of the lower jaw, and which they state to proceed downward to the body of the bone from the articular cartilage; in this instance the latter was unformed, and there resulted, consequently, a want of development of that part which should grow from it."

"NEURALGIA WITH DEAFNESS, CURED INSTANTANEOUSLY BY THE EXTRACTION OF A TOOTH.—M. Ed. Vautier records (*Gaz. des Hôpit.*, June 14, 1860,) a case of this. The subject of it was a very nervous, slender woman, who had suffered for about four months with intense neuralgic pains, radiating through almost all the teeth, and also the muscles of the anterior region of the left side of the head. There was constant lachrymation of the left eye, and, from the moment of the attack, complete deafness in the ear of the same side. A number of physicians had been consulted, and sulphate of quinia, flying blisters, and atropia, in succession, tried, without giving relief. When seen by Dr. B. she was suffering severely; had long been deprived of sleep, and could not chew her food. The teeth were examined with care, but no one could be found carious. The wisdom tooth on the left side seemed, however, slightly painful on being touched, and loose. She was advised to have this tooth extracted, but with some temper refused. However, some days afterward, her physician again advising it, she consented, and the tooth was extracted by M. Vautier. The pains at once ceased, and her hearing was restored."

"SOMETHING NEW ABOUT GOLD.—At a late meeting of the Manchester Geological Society, an interesting paper was read by T. A. Readwin, Esq., on gold discoveries which had been made by him in Merionetshire, Wales, and he exhibited numerous rich specimens of ore taken from it. He stated that Sir R. Murchison had laid it down that 'the most usual position of gold is in veinstones that traverse altered paleozoic slates, frequently near their junction with eruptive rocks, whether of igneous or aqueous origin.' This statement was remarkably corroborated by the position of the quartzose vein in Wales, which traversed altered paleozoic slates, near the junction of an eruptive bar of porphyritic greenstone. The same law was found to hold good in all the gold-bearing quartzose veins of Wales. Several shoots and bunches of gold were found in one mine. In one instance, 100 pounds of goldstone yielded 14½ ounces of fine gold. Lately, operations were commenced to mine the quartz upon what is called 'St. David's lode.' Of the rock which had been raised and broken, many stones were found very rich in gold and sulphides of copper, and there was another mineral, which had been termed *white metal*, that had been examined by several mineralogists, none of whom knew what it was, an ignorance which was shared in by the members of the Association after much examination. Cubes of this white metal were found in cubes of gold, and *vice versa;* and wherever it was found, it was a sure indication that gold was there also. Mr. Readwin, in his paper, asserted that at a certain temperature gold would volatilize and escape mechanically, though such was not the general belief. Mr. Atkinson, a member, stated that gold was sublimated from the earth by internal heat."

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DENTAL REGISTER OF THE WEST—MARCH.

OHIO COLLEGE OF DENTAL SURGERY.—Regretting that limited space prevents the entire republication of PROF. JOS. RICHARDSON's excellent address to the graduates of this institution, we take pleasure in directing attention to the following extract, as embodying, in terse and forcible language, sentiments which will meet with a hearty response in the breasts of all who regard their profession as something more than a mere trade, and who, in addition, recognizes the claim it has upon them to add their mite to the aggregate of knowledge already attained, through the exertions of devoted and indefatigable laborers in the cause of dental science:—

"We repeat, therefore, that every man who avails himself, for purposes selfish or humanitarian, of the accumulated experiences and teachings which the common labor of the profession has garnered up, incurs thereby a debt which, in all honor and honesty, he is under obligations to cancel by an unreserved consecration of his best powers to the good of the profession and the interests of humanity. His acquired knowledge is but a common fund which he holds in trust, and by all the exactions of good faith, he should make a good account of the trust reposed in him, and see that it is faithfully executed. Various means suggest themselves by which you may be enabled to make some fitting return for the great benefits you have received through the labors of those who, through all the changing fortunes of a comparatively new profession, have worked steadily and hopefully on to make it what it now is. Prominent among those means are self-culture and improvement. If you have, for a moment, pictured to yourselves lives of luxuriant ease in the practice of your chosen profession, disabuse your minds of what can only tend to enervate and demoralize you, and what must inevitably lead to bitter disappointments, if you have a single aspiration to excel. It involves hard labor if a man but aims to keep up with the profession, but I hold even this to be beneath the dignity of a man's reach in the practice of his calling. What if all were content with simply *keeping up* with the profession? All acting on that principle would bring our specialty at once to a dead halt. Each one content with what is already known, would end all progression. The true idea or philosophy of progress is illustrated in every man's endeavor to add, to the department of knowledge to which his calling relates, something not already known. Many there are who, with criminal slothfulness and indifference, play their ignoble part with no thought of the great demands of science or of humanity pressing on them; human machines, vitalized with mere selfish instincts, who never move in any enterprise outside of the contracted circle of their own sordid interests, unless, perchance, they are driven to it with whip and spur; men who drivel over their daily round of office engagements and forced duties with the persistence and exclusiveness of an ass on a treadmill, and who make about as much progress in their profession as the aforesaid animal on the wheel, whose revolutions never advance his nose one solitary inch beyond the rack at which he feeds. Spiritless and indolent, they shrink like cravens from the more exalted duties of their position, and are seemingly content to eke out an inglorious and almost profitless life as dull and unproductive plodders in the beaten path, feeding from day to day, like professional mendicants, upon the intellectual crumbs that fall by the way from other men's brains.

"Now, although it may not be altogether unworthy of a man's ambition to attain to a full knowledge of the facts and truths of his profession, yet it is certainly more worthy of his powers to take a step in advance of its present attainments, and to strive to enlarge its boundaries and augment its achievements by his own personal contributions. To do this it will be necessary for you to avail yourselves of all the means of self-improvement within your reach. You should be hard and unremitting students. You should read much, not for pastime or amusement, but for instruction. Read carefully and analytically; note well the *facts* presented to your minds, and place authors' inferences or deductions from those facts on trial. Facts you may not dispute, but opinions may be fairly challenged. Take no man's conclusions for granted, but subject them, in candor and with impartiality, to the test of your own judgment, observation, and experience. Cultivate a spirit of independent thinking, but with modesty and distrust in your own infallibility. Nothing so surely tends to mental decrepitude as a slavish reliance upon the opinions of others,—nothing so fatal to mental growth and culture as the poor-spirited committal of your own judgment into the keeping of others. Treat every man's opinion with respect for your brother's sake; and while you do your own thinking, be always as ready to renounce errors of judgment when apparent to your consciousness, as you are to adopt those facts which commend themselves to your acceptance."

In the report of the proceedings of the Ohio Dental College Association we find that quite a change has taken place in the Faculty of that College, Profs. J. Byrd Smith, Geo. Watt, and C. B. Chapman having tendered their resignations. It was,

"On motion of Dr. H. A. Smith,

"*Resolved*, That the thanks of this Association be tendered to the retiring members of the Faculty, for the very able and efficient manner in which they have performed their duties."

Prof. Taylor, on the part of the Faculty, then presented a number of resolutions, suggesting the propriety of reducing the number of Chairs to five, changing the duties of some of the Chairs, and recommending the election of Dr. C. B. Chapman to the Chair of Chemistry and Physiology.

The suggestions of the Faculty, after considerable discussion, having been adopted,

"The Association proceeded to nominate a person to fill the Chair of Anatomy and Histology, when, upon balloting, Dr. W. H. Atkinson, of Cleveland, Ohio, was found to be unanimously chosen, subject to the Board of Trustees for election."

We sincerely wish the institution, under the new regimé, that encouragement and support which the capabilities and exertions of its Faculty in the advancement of dental science will justly entitle it to. Situated as it is, in the centre of the great Mississippi valley, which contains within its limits about two thousand dental practitioners, it is reasonable to infer, that the day cannot be far distant when its classes will number from one hundred upward.

Refitting Temporary Plates.—Under this caption, Prof. Richardson presents the following methods for remedying the difficulties attendant upon temporary work, brought about by the changes which occur in the absorption of the alveolar ridges:—

"*First method.*—Take, for example, a full upper set on either gold, silver, or vulcanite. Secure, in the first place, an accurate impression of the mouth in its changed condition in plaster, and from this a plaster model in the manner usually practiced. Perforate the palatal portion of the plate with from eight to twelve holes at different points, and also the external borders, from heel to heel of the plate, at intervals of from one-eighth to half an inch apart, and near the edges. These holes may be enlarged to the dimensions of a medium-sized knitting-needle; or if the piece is of vulcanite, to twice or three times that size. On the lingual and buccal surfaces the holes are well countersunk with a bur drill. The plaster model, with the central portion raised to form a chamber, (and which should be made to correspond, as nearly as possible, in position, form, and thickness, with the chamber in the plate, if one exists,) is next heated throughout by placing it over a spirit flame, or in the baking furnace of an ordinary cooking stove, or the muffle of a furnace, and when of a temperature that will barely admit of being taken in the hand, remove and cover the face of it with a sheet of india-rubber or gutta-percha as prepared for vulcanite work, and press it down upon the face of the model with the fingers. Apply the perforated plate to the model, being careful to secure a proper relation of the two; then press the former down firmly upon the model. To render the vulcanite material still more plastic and compressible, the whole may now be returned to the furnace, and subjected to a uniform heat throughout, when it may be removed, and firm and steady pressure made upon the plate and teeth, until forced, as nearly as practicable, into contact with the face of the model. Portions of gum will be forced through the apertures and out at the borders of the plate; these should be well packed into the countersinks and under the edges of the plate, when the model, with the rubber and plate adherent, may be placed in a vulcanizing flask and incased bodily in plaster. It is then placed in a heater and vulcanized. If all the steps in the process have been carefully conducted, the fit of the plate will be perfectly restored, with no material change in the antagonism, or none, at least, that is not susceptible of ready correction. The union between the vulcanite lining and the plate will be strong and lasting, and altogether impermeable to the fluids of the mouth.

"In the case of lower pieces, the holes should be made along the external and internal borders of the plate near the margins. In all other respects, the manipulations are the same as those described above.

"It is scarcely necessary to observe that, in the use of gold plates, the method is inapplicable whenever it is designed to reswage the same plate for the permanent piece.

"*Second method.*—Perforate the plate, whether of gold, silver, or vulcanite, as before directed; and employing this as a cup or holder, take an impression of the mouth in plaster, pressing the plate up closely to the parts. The plaster forced through the holes, and filling the countersinks on the opposite side of the plate, will serve to bind the plaster to the plate, and prevent, with cautious manipulation, the two from separating as they are being detached from the mouth. When removed, the plaster impression lining the plate is trimmed even with the borders of the latter, and then varnished and oiled. The lower section of a vulcanizing flask is now filled with a batter of plaster on a level with its upper surface, and the impression, filled with the same, is turned over and placed in the centre of the flask, with the edges of the plate touching the surface of the plaster. The plate and adhering plaster are now carefully separated from the model. After cutting out the plaster from the holes and countersinks in the plate, the plaster forming the impression is detached from the plate, and the holes and countersinks filled with wax. The plate is then readjusted over the model, and (the surrounding surface of the plaster in the flask having been varnished and oiled) plaster is poured in upon the upper surface of the plate and teeth, filling the upper ring. When the plaster is sufficiently hard, the two sections of the flask are separated, and grooves formed running out from the matrix to the margins of the flask. A sufficient quantity of vulcanizable rubber is now either placed upon the model or packed in upon the palatal surface of the plate—before doing which, however, the wax filling the holes and countersinks in the plate (and which was placed there to prevent portions of plaster last poured in forming the matrix from running in and filling them up) should be worked out with a small instrument. The whole being sufficiently heated, the two sections of the flask are forced together, expelling redundant material. The piece is then vulcanized as in the former case.

"The above method, though somewhat more complicated than the former, is quite simple in its details, and will occupy but little more time, and is, withal, more certain in its results. For the idea of forming a matrix substantially as described, I am indebted to Mr. R. A. Mollyneaux, an intelligent member of the present class of the Ohio Dental College."

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TINCTURE OF IODINE IN CHRONIC PERIODONTITIS.—In commenting upon this subject, Dr. Watt remarks:—

"Our ignorance sometimes discourages, and sometimes disgusts us; hence we prefer to expose it, rather than be tortured by its continuance. So here goes. We didn't know it was very cute—there now, that's a vulgarism—we didn't know it was very *acute* to have the good sense to use iodine 'in the treatment of chronic periodontitis accompanied by a constant discharge of pus,' till we learned the fact from the editorial department of the February number of the Dental Cosmos. There we are told that, 'useful as the remedy is, it is only, however, within the past four years that the attention of the profession was first directed to it by Dr. Garretson,' which may be all true enough; but so common was this agent thus used, in these regions, when we came into the profession, that we, ignorantly it is true, supposed every *dentist* used it whenever the case seemed to require it. We used it for such cases before we came into the profession. The first time we ever saw Dr. Atkinson, if our memory is correct, he was pumping tincture of iodine into an alveolar abscess. This was in 1854. But he was, perhaps, like us, ignorant of the fact that there was need to direct the attention of the profession to it; and hence, this duty was left for Dr. Garretson, and we are heartily glad he has performed it. But we still think that a reasonably extended medical education would suggest the remedy, without special attention being called to it."

In response to the above, we will not pretend to question for one moment that Drs. Atkinson and Watt, as stated, may have employed this agent for a long period; but it is a little singular, if it was thus used as a common agent "in these regions when we came into the profession," that no reference, to the best of our knowledge, had ever been made to it by dental writers, in numerous communications on the treatment of alveolar abscess, and, notwithstanding the fact that other remedies are strongly recommended, it should have been entirely overlooked in *all the text-books* published even within the last few years; and particularly by the last one, (Taft's Operative Dentistry,) which was written in that region. The silence of these writers, however, may have been due to the fact that they also thought "that a reasonably extended medical education would suggest the remedy, without special attention being called to it."

As we have always supposed that it was the *special* duty of contributors to magazines, to direct attention to new remedies, or the new applications of old ones, we would beg leave to suggest, that the remark above embodies rather a singular doctrine, and which, if carried out in all directions, would render our periodical literature of little or no value. Fortunately, however, it is the presentation of a multiplicity of just such facts as these which should suggest themselves to everybody's mind, *but do not*, that constitutes the great claim that properly conducted journals have upon the profession; their pages rather than the books reflect the present knowledge of the profession as a whole, and it is there that the facts and opinions eventually embodied in books, (and too often without acknowledging the sources from whence they were obtained,) are first presented or foreshadowed.

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEO. J. ZIEGLER, M.D.

Lecture on Dentition and its Derangements. By A. JACOBI, M.D., Professor of Infantile Pathology and Therapeutics in the New York Medical College.

"The enamel of the teeth is subject to several anomalies. It may be either defective or discolored. Its defective formation appears either in excavations dispersed over the surface of the tooth, or there are complete furrows or transversal notches around the crown of the tooth, the body being still covered with, or entirely deprived of enamel. This atrophy is the result of those severe diseases which the child may have been suffering from during the development of the enamel. Acute exanthems are said to produce the dispersed excavations; acute inflammatory diseases, the furrows; and rachitis has often been observed to be the cause of the entire absence of the enamel. The incisors of rachitic children are usually small, appear late, and are very liable to become carious. Acute exanthems are counted among the causes of this anomaly, especially by such writers as classify the teeth with the dermal tissue. Small-pox is related to produce isolated excavations which have a great similarity to the cicatrices remaining after small-pox. To vaccination also some have attributed the defective development of the enamel. Such children as were vaccinated before any teeth appeared, or after their complete development, had finer teeth than those who were vaccinated during their protrusion and growth.

"According to Prof. Nessel, the age can be determined in which a child was affected with a severe disease, from the species of teeth affected, and the distance from the top of the crown in which excavations or furrows are found. If the incisors and the first molars are defective in enamel, the disease ran its course between the twelfth and eighteenth months, whereas a disease of the fourth or fifth year will leave its vestiges in the second molars. The longer its duration, the broader the furrows. When disease returns at different periods, there are often furrows at different heights. Prof. Nessel is of the opinion that this abnormal condition is the effect of a severe disease, influencing as well the membrane outside the ivory, from which the enamel is deposited, as any other part of the organism, but does not depend on supposed abnormal acidity of the liquid contained in the dental sac. For if this were the cause we should expect the enamel to be defective all over below the line that was formed before the disease occurred. Whichever may be the cause, the anomaly cannot be removed. It would be aggravated by leveling the surface of the tooth, as extensive caries would be the immediate consequence.

"Another anomaly of the enamel is its discoloration. Brownish spots are the result of original development and composition. White spots are sometimes the effects of mechanical injuries producing local disorganization of the enamel. They consist of carbonate of lime instead of the phosphate and fluate, and from the fragility of the enamel at these places are apt to give rise to carious degeneration.

"The anomalies described cannot be mistaken for those irregularities of shape, such as furrows extending around a whole tooth, which are sometimes observed as family peculiarities. Such teeth are generally hard and solid; have very little tendency to become carious or wear prematurely, and differ widely from those soft and friable teeth which are due to the arrest of development in early infancy, by either hereditary disposition, or accidentally contracted severe disease, or protracted malnutrition.

"To Mr. Hutchinson, of London, the profession is indebted for a number of good observations on the influence of hereditary syphilis on the development of the teeth. Although the majority of his remarks relate to the permanent teeth, in which this hereditary malady exhibits itself best, there are some morbid symptoms in the temporary teeth belonging to this class. The temporary teeth, in hereditary syphilis, do not present any peculiarities of form; they are, however, often of bad color, and are very liable to early decay. The central upper incisors are the first to suffer from caries, and often crumble away under its influence, within a year of their being cut. The upper lateral incisors soon follow, but the canines very rarely indeed. The caries generally attacks the neck of the tooth, and rapidly penetrates through it, causing the crown to crumble away, soon after which the fang falls out. Children who have suffered severely from syphilitic stomatitis, are often toothless as regards the whole of the upper incisors, from the second year till the permanent set are cut. Occasionally, the lower incisors suffer in the same way, but far more seldom than the upper ones. The deciduous canines rarely either become carious or drop out. They are, however, liable to a curious kind of circular wearing away, a sort of tusk or peg remaining in the centre of each tooth; the process of circular attrition having commenced a little above the level of the dental neck. This condition Mr. Hutchinson has seen in but five or six cases, and in all these it was symmetrical on both sides, and in both upper and lower sets; he has never yet seen it excepting in syphilitic children. It is not usually produced in any very morbid degree until about the age of six or eight years. He has met with an approach to it in one of the molar teeth of a syphilitic child. The outer layer must, at least, be of a peculiar and abnormal softness to be worn away so singularly.

"Original disposition is not an uncommon cause of the enamel being deposited in a thin transparent layer only. The children in whom it occurs are usually of weak and feeble constitution, and particularly defective as to the development of their osseous system in general. Transparency of teeth according to Rudolph, and bluish-white color according to Duval, are symptoms of rachitis; semi-transparency, as of horn, of herpetic predisposition; semi-transparency and milk-white color, of scrofula and tubercles; yellow and white spots, intermingled, with derangement of general development; small, white, yellow, or brown spots, of commencing caries. Yellowish-white color, and average darkness, are found in the most durable and solid teeth.

"There is one agent, the influence of which appears to be particularly dangerous. I allude to sugar. It has long been considered by physicians and the public as the cause of many cases of caries of the teeth. Its tendency to be transformed into acid is well known. Every acid is liable to disorganize the enamel of the teeth. It is proven by direct experiments that sugar dissolved in water, and exposed to a certain temperature and a continued afflux of atmospheric air, would not disorganize enamel, although this were kept in the solution for many weeks after the transformation of sugar into acid has taken place. There is, however, a difference in the transposition of sugar, according to whether it takes place in a tumbler or on the teeth. The change is more rapid on the teeth than otherwise, from the fact that the air is constantly renewed in the mouth. Thus it is, that the enamel of the anterior side of a tooth is more often affected first, for the common observation is, that the anterior and lateral surfaces of the teeth are affected, badly developed, cracked, or their enamel entirely absent, while the posterior surface is proportionally uninjured. Slight though the effect may be for some time, it will prove dangerous to the normal condition of the tooth whenever frequent repetitions of the same injury take place. However this may be, this is certain, that there are some writers who deny the injurious effect of the sugar on the teeth, from the fact that the negroes on sugar plantations have the most beautiful and strongest teeth. Perhaps the lime which is usually contained in refined sugar has something to do with [the prevention of?] the deleterious influence on the dental structure. Such, at least, is the opinion of Hille, who observed both negroes and creoles of Surinam to have beautiful and white teeth, although they are constantly using sugar; but unrefined. The same author, however, adds the remark, that the unrefined sugar also is not prepared without lime, but he is inclined to attribute the health of the teeth to the absence of scrofula in that island. In the Netherlands he found, together with the general prevalence of scrofulous diseases, early decay of teeth. Falck, in his researches on diabetes mellitus, observed caries of the teeth in many instances; he does not attribute this anomaly to the direct influence of sugar, but to its transformation into lactic acid. This transformation takes place readily by the action of saliva, which is generally found to be acid in persons suffering from diabetes.

"Fruit, both sour and sweet, are known to destroy the dental structure. Even in adults the same disastrous result is observed. Therefore, in allowing fruit to children, Spielberger's advice is very good, viz.: Let the juice be absorbed or removed from the teeth, by the simultaneous use of either bread or water.

"One of the most injurious agents in destroying the teeth, is the sudden change of temperature. Of the different layers, enamel, ivory, etc., a sudden change of temperature will affect more the outer than the inner one; the enamel will be liable to crack without being thrown off, as there is an organic connection between the enamel and ivory; but in the cracks acids, or any other injurious substance, will succeed more rapidly in disorganizing the structure.

"As malnutrition is among the principal causes affecting the healthy composition of teeth, it is necessary to know the kind of food which is proper for children before and during dentition. Previous to the eruption of the first teeth, infants do not masticate; consequently, as a uniform rule, the food must be such as does not require mastication. Milk and soups are appropriate to this age. Amylaceous substances must be avoided, at least as a general nourishment, for a number of months; with the exception of those cases in which, for professional purposes, you think proper to allow them. Saliva, which is absolutely necessary for their digestion, is secreted in too small quantities in the very first months of life; thus the digestion of arrow-root, and farina, and rice-flour, and all the other amylacea is thrown upon the digestive powers of the stomach, then undeveloped in its muscular structure, and unprepared, from the amount and kind of its secretions, for difficult digestion. If you cannot expect amylaceous matters to be readily digested, even when suspended in water and milk, how much less in a dry form, without the admixture of any liquid, as it is frequently given? Frequently the instinct of the mother is seen to correct, in some measure, the insufficiency of infantile digestion, by first masticating and soaking with her own saliva the bread, or cracker, etc., destined for her infant. This is an aid to infantile digestion, certainly, but it is a singular method of improving on nature's functions.

"At the period of the eruption of the first teeth, the child first succeeds in performing the movements of mastication, and about the same time the salivary glands attain a higher development and exhibit a larger amount of secretion. It appears then, as a direct consequence, that amylaceous food, in moderate quantity, and well soaked, will prove digestible.

"After the molar teeth have made their appearance, in the third and fourth half years of infantile life, a great change occurs. The salivary glands are developed, the muscles of the infantile stomach strengthened, its digestive powers increased, and about this time more solid food is well borne, and may be allowed. Not only may more solid food be given, but you should order it. Every organ must be exercised according to its development and power, and hence you would not only weaken the stomach by withholding proper stimulus to exertion, but also the consistency and health of the very teeth would be affected; for it is an established fact, that the teeth will more often remain normal with solid and dry, than with liquid, soft, and boiled food. Vegetable food especially requires protracted mastication and a large amount of saliva. Those animals known by the name of ruminants spend the largest part of their life in mastication. Mastication and saliva have not so much influence upon animal food; carnivorous animals will not masticate their food slowly, but they tear it in pieces and swallow it at once, leaving all the work of digestion to the stomach, and the other digestive organs of the abdominal cavity. Thus, even children without teeth, and without the full development of their salivary glands, will digest animal food, especially extracts, soups, etc., if administered to them. For this very reason, be cautious in directing the nutrition of small children: such as have no teeth, or bad teeth, or toothache, ought to be kept on a very small amount of amylaceous food, if any; whereas animal food, which requires less saliva and less mastication, is better taken and more readily digested. As it is certain that the first years of life will usually decide as to the future condition of the digestive organs, you perceive the necessity of being unusually careful at this period. You will generally find that little attention is paid to the temporary teeth. Parents and physicians do not care much about them, because they are to fall out and be replaced by the permanent teeth. But when you consider that the permanent teeth will not appear before the seventh or eighth year of life, you perceive what injury can and will be done if the milk-teeth are neglected. Their original condition does not generally depend on the attention of the physician, for they are formed during fœtal life, and their nature is determined sometimes by hereditary influences. Healthy and robust parents, endowed with good constitutions and normal development of their osseous systems; a mother who has been well during pregnancy, and not suffered from any morbid predisposition; wholesome and appropriate food; a well-ventilated residence,—these are the conditions which influence the proper development of the teeth of the infant.

"Great care should be exercised in feeding. Every adult will remove such remnants of food as are retained in the mouth after meals, by either cleansing the mouth with water, or the tongue, etc. Not so with children. Whatever they have not swallowed will be retained in their mouths, adhering to their tongues, cheeks, fauces, or in the folds of the maxillæ; even the food which has been swallowed will be ejected, owing to the extreme readiness of vomiting observed in a large number of infants. These particles of food, farina, arrow-root, milk, etc., are very liable, by the influence of the air passing the mouth, or with every respiration, to become sour; and then, by their acidity, to affect the crowns of the teeth. Again, you are aware that mothers and nurses, not among the poorer class of the population only, will, whenever a child is crying, either surfeit it with food, and thereby produce vomiting, or gastric catarrh with a superabundance of acid in the gastric secretion and the contents of the stomach, or what is equally reprehensible, put in its mouth a mass composed of cracker or bread, with water or milk, and sugar. Now, nothing has a greater tendency to become acid than sugar; even in the intestinal canal the transformation of sugar into lactic acid is a common and normal occurrence. It is not strange, then, that under the influence of ever-changing air in respiration, and the renewed afflux of oxygen, the transformation of the sugar into acid should take place very rapidly. You know, from what has been said, that the crowns of the teeth are very easily influenced and destroyed by any slight acid brought into contact with them, even by fruit of any description; you will, therefore, not be surprised to find that the teeth will be severely affected by the transformation of the sugar contained in these filthy compounds. Children of from two to three years of age, come under your observation daily in whom this bad custom, and nothing else, has been the cause of the decay of the milk-teeth; thus giving rise to disturbances of the general health, and toothache in early life. To discontinue their use is absolutely necessary before the eruption of the first incisors, as it will be very difficult to do so afterward. The reason of this is well explained by Spielberger, who emphatically denounces the bad practice alluded to. After the enamel is removed from the crown of the tooth, from the constant effect of the reproduced acid, and the exposed situation of the crown, the access of cold air, and the contact with other warm or cold beverages will produce intense pain. Even the sucking-bag itself will give rise to pain by becoming cold, and the child will cry until a new and warm one is supplied by the nurse, whose pity is excelled by nothing but her ignorance. She will remove the cold one, and dip it into a warm solution of sugar, or keep it in her own mouth, and again put it into the infant's mouth, and the child will now keep quiet, sucking, and sleeping, and it will also allow the nurse to sleep. You will meet with infants sometimes, who are perfectly incapable of sleeping without this substance between their lips, from the mere fact that the enamel of their teeth is removed, and the ivory half gone, and the infant feels pain from having no protection against the cooling influence of the air. Thus the teeth are destroyed until the pulp, too, is affected, when the child will feel no longer any pain. It has no pain, and no teeth. A tooth will sometimes be eaten away in this manner before the crown is fully developed. You will meet with a large number of children, who, from one or more of the reasons alluded to, have no healthy incisors, or, perhaps, no incisors at all, from their second or third year, up to their seventh or eighth.

"As the incisor teeth have no other office but to rend or cut the food, digestion itself will sometimes not suffer much, provided the child masticates well otherwise, mixes the food with a sufficient quantity of saliva, and has a perfect and undisturbed gastric and intestinal digestion, *on the condition* that the knife, before the food is brought over the lips, does the work of the incisor teeth, as much as artificial means can do. But a serious consequence, alluded to by a number of physiologists, and lately by the above-mentioned author, must not be overlooked. You know that a number of letters, as D, T, and even S, C, St, etc., are formed by the tongue approaching the top of the incisors. But what if they are absent? The child will try to pronounce as well as circumstances will permit; thus those consonants are formed by the tongue touching the alveolar margin of the jaw-bone, and pronunciation becomes unclear, thick, and lisping. This misfortune is not at all mended by the temporary teeth being replaced by the permanent ones, about the age of seven or eight years; for the child has been accustomed to bring forward its tongue in pronouncing the consonants D, T, S, C, etc., to the alveolar process, and scarcely ever will this custom be replaced by the better one of again accustoming the tongue to touch the top of the incisor teeth. No muscles are more obstinate, when once used to one particular action and motion, than those of the tongue. This is seen in the attempt to pronounce a foreign language. There are few men who are able to pronounce certain words of a foreign language as well as those of their vernacular; and it is a fact, that, from mere physical reasons, a young person will learn the pronunciation of a foreign language more easily than adults, whose lingual muscles have been active for decennia in the same manner and direction, and with the same exertion. Thus there are, therefore, reasons for carefully preserving the milk-teeth in young children, other than merely for the sake of beauty, or digestion, or comfort. If they are destroyed, if toothache is produced, or other inconveniences result, you will naturally think of extraction of such tooth. In my second lecture I alluded to the fact, that after the extraction of a tooth, the jaw-bone becomes atrophied, the alveolar margins narrower, thinner, and lower, and that in the extraction of a temporary tooth this danger is greatest; for at a later period of life, the permanent one will not meet with sufficient space. Moreover, the molar teeth, at the age of four or five years, have long and deep roots, whereby extraction is rendered very painful. It must be borne in mind, also, that the pulp of the permanent tooth is, about this time, imbedded between the roots of the temporary one, and you may, by forcibly extracting the one, deprive the child of the other at the same time. Again, a hard cicatrix will be formed by extraction, and the permanent tooth may cut through it with difficulty. The child has also suffered a severe loss, being deprived of one of its instruments for mastication. If you can preserve the tooth it is your duty to do so, while in cases of carious molar teeth in children, it is better to have them filled than extracted. My remarks refer to the normal condition of the teeth and gums. But the tooth must be removed in cases of dental caries, where an inflammation of the inner alveolar membrane, and sometimes suppuration, takes place—a morbid process, which is, in a number of cases, complicated with swelling of the submaxillary glands. These tumors are commonly considered scrofulous, but when they are the only symptoms of scrofula which you can detect in a child, never forget to examine the state of the jaw and the teeth, and search carefully for a deep-seated, painful inflammation and suppuration around the root of a tooth." —(*Amer. Med. Times.*)

"*On the Melting Points of some of the Elements.* By WILLIAM CROSSLEY, Assay Master, Ormesby Ironworks, Middlesborough.—It is remarkable that in almost all the series or groups of the elements mentioned by Mr. Coleman, there appears to exist a peculiar relation between the atomic weight and the melting point, which to a certain extent confirms his opinion that the equivalent number of an element expresses a certain amount of force, modified by its atomic volume. As an illustration we will take the group zinc, palladium, platinum.

	At. Weight.	At. Vol.	Melting Point.
Zinc	33	57	773° F.
Palladium	53	57	Highest heat of wind furnace.
Platinum	98	57	Oxyhydrogen blowpipe.

"Here we have a group of elements having a like atomic volume with an increasing atomic weight, not only decreasing in active chemical attraction, but decreasing in fusibility as the weight of the atom increases. Does the atomic weight here represent a force? We think so, because it appears general. Let us pass on to some other groups.

	At. Weight.	At. Vol.	Melting Point.
Sulphur (crystallized)	16	101	239° F.
Selenium	40	101	420°
Lead	103·7	114	617°
Silver	108	128	1873°
Gold	197	128	2016°
Chlorine (liquid)	35·5	320	Gaseous at com. tem.
Bromine	80	320	Liquid do.
Iodine	127	320	Solid do.
Aluminium	14	66	Red heat.
Chromium	27	66	Agglomerate but not fused at the highest heat of the wind furnace.
Molybdenum	46	66	
Tungsten	95	66	

"Here we have four groups, in each of which the elements having the least atomic weight offer the least resistance, not only to the action of other elements, but also of heat. In so many groups, taken, as it were, at random, it cannot all be accident. There are, however, exceptions: we find them in the groups—

	At. Weight.	At. Vol.	Melting Point.
Manganese	27·6	44	Highest *heat* of wind furnace.
Iron	28	44	" "
Cobalt	29	44	" "
Nickel	29	44	" "
Copper	32	44	1996° F.
Phosphorus	33	211	111°
Antimony	129	224	Red heat.
Bismuth	213	270	507°

"Manganese and iron, and, perhaps, cobalt and nickel, follow this law, but copper varies very much; for this we can see no reason. Phosphorus and antimony follow the law, but bismuth comes between. What can influence it? Look at its atomic volume; it differs 59 from that of phosphorus. We cannot, therefore, be much surprised at its having a different melting point.

"These facts support Mr. Coleman's views. The subject is interesting and well worth discussing."—(*Chem. News* and *Franklin Inst. Jour.*)

"*Clinical Remarks on Neuralgia* By E. H. Sieveking, M.D., Physician to St. Mary's Hospital.—Neuralgia is essentially a disease of middle life. The proclivity to it increases up to the fourth decennial period, when it occurs most frequently; after this time the tendency again diminishes in an inverse ratio with the advance of life. The susceptibility of early life to derangements of the nervous system is known to be very great; but it shows itself mainly in spasm. Tonic and clonic convulsions of a local or general character are the chief manifestations of infantile disease of the nervous system; pain, doubtless, often occurs, but it is commonly indicative of inflammatory action, while those causes which induce neuralgia in the adult give rise to the various forms of spasm in the child. There is an analogy between infancy and old age in many points; so in regard to the relative frequency of neuralgia. We do not, however, find that the aged present the tendency to spasmodic disease which characterizes the young. It would be interesting to dwell upon the physiological peculiarities of the different ages to which these differences and analogies are attributable; it might be attractive, if not very profitable, to speculate upon the teleological considerations involved in these various phenomena; but we must now content ourselves with the elucidation of the facts, rather than pursue a theory.

"I cannot, however, avoid pointing out one palpable circumstance connected with the comparative predominance of neuralgic affections in adult life: it is, that they occur when they can be best borne. The physical endurance of the child would be insufficient to meet the exigencies of the severe pain which, in neuralgia, often nearly prostrates the adult in full vigor. On the other hand, the susceptibilities of the aged are manifestly reduced to a much lower ebb than they exhibited earlier in life; hence, though similar causes may operate, their effects are not recognized by the same symptoms as those which declare themselves in the child or in the adult.

"If we examine the cases at our disposal, in order to determine their distribution according to the decennial periods of life, we find a steady progression up to the fourth decennium, after which the decline takes place with nearly the same regularity as the previous rise. The first decennial period yields one case at the age of ten in the comparatively rare form of brachial neuralgia; in the second we find seven cases; between the twenty-first and thirtieth years, both included, the number increases to seventeen; while the highest number occurs from the years thirty-one to forty. The fifth decennial period has seven, the sixth eight cases; in the succeeding one, embracing the years sixty-one to seventy, we find the number reduced to three, while the series is concluded as it began by a single female, rejoicing in the age of seventy-three.

"The relative frequency of neuralgia between the twenty-first and fortieth years would doubtless have been materially magnified had those numerous cases of painful dyspepsia been included which are ordinarily classed under the term gastrodynia; this, however, has not been done, because I wished to have as definite a field to work upon as possible, and as in so many cases of gastrodynia, unless they are very carefully watched, the diagnosis from gastric ulcer may remain doubtful. I shall, however, not hesitate to give, among the illustrative cases which I propose to lay before the reader, some cases of what I have regarded as undoubted gastric neuralgia, where the diagnosis has been confirmed by close observation or by the results of treatment, to which, unfortunately, we are compelled to have recourse at times for the verification or rejection of views adopted at the outset of a case. The list might have been further enlarged by including cases of headache, many of which are undoubtedly neuralgic. They have been omitted for analogous reasons.

"If we ask whether the two sexes agree in the mode of distribution at different ages, the reply is that there appears to be no essential variation. The cases which serve as the special basis of these observations would be arranged as follows: it being premised that the numbers stand in the order of the successive decennial periods of life, and that the upper row represents the females, the lower the males:—

F.	1	4	8	12	5	3	1	1
M.	0	3	9	9	2	5	2	0

The gradations are more regular in females than in males, but the difference is too trifling to merit discussion. We may lay it down, then, as a law applying equally to both sexes, that the period of life by far the most prone to neuralgia is that intervening between the twentieth and fortieth years, the number of cases occurring during this space of time far exceeding all those which belong to earlier and later dates collectively."—(*Lancet.*)

"*Death from Mental Depression and Chloroform.*—M. CAZENAVE, of Bordeaux, was lately called some distance to amputate the leg of a gentleman, aged forty, whose horse had fallen upon the limb. Several hours elapsed between the accident and the intended operation; and when M. Cazenave had finished his preparations, aided by two medical practitioners who had been called in soon after the mishap, he exhorted the patient to take courage, as the latter was extremely depressed at the idea of losing his leg, and often broke out in loud lamentations. It was agreed, upon the patient's request, that chloroform should be used; but as his spirits were so bad, and the powers of life low, M. Cazenave resolved to withhold the chloroform, asking the medical man who was about to give it to feign the administration of the anæsthetic. The handkerchief was therefore held at a great distance from the face, but the patient had hardly made four hurried inspirations when respiration ceased, and the action of the heart stopped. All the means resorted to in order to revive the patient was unavailing. M. Cazenave considers that the chloroform had nothing to do with this result; it is probable, however, that the melancholy event was due to mental depression aided by the chloroform."—(*Ibid.*)

Facial Neuralgia.—In an interesting clinical lecture upon the subject, published in the *Chicago Med. Examiner*, DR. E. ANDREWS thus epitomizes his views of the pathology and treatment of this affection. "The key which unlocks all the mysteries of these cases is the following proposition: *Facial Neuralgia generally results from the compression of some of the branches of the fifth nerve at the points of passage through the canals and foramina of the facial bones.* * * * * * *

"The pathology of these cases may be briefly elucidated as follows:—

"1st. The fifth pair of nerves, above every other pair in the body, sends its branches through a multitude of bony foramina.

"2d. Any irritation of the bone or periosteum may cause constriction of the foramina or thickening of their fibrous lining, in which case the nerve is pressed upon and renderd neuralgic. Other tissues can accommodate themselves to a continuous pressure, so as not to be permanently troublesome, but it is a peculiarity of nerve trunks that they will not thus submit, but keep up from year to year the most atrocious torments.

"3d. From this it follows that constriction in the supra-orbital foramen will give rise to neuralgia of the forehead; in the infra-orbital foramen it will cause pain of the incisor teeth, upper lip and cheek; in the posterior palatine canal it will cause pain in the roof of the mouth where the palatine nerve is distributed; in the dental canal of the lower jaw it will affect the lower lip, the chin, and all the teeth anterior to the point of constriction

"The treatment suitable for neuralgia of the fifth pair is, in the first place, to remove the constitutional diathesis upon which the local constriction depends; as, for instance, the rheumatic, syphilitic, or malarious influences. If this does not suffice, but the pain continues intolerable and incurable, then you must resort to surgical interference. The surgical operations adapted to these cases are of two kinds. The first is the subcutaneous injection of narcotics over the seat of constriction, and the second is the extirpation of a portion of the trunk of the nerve."

"*Effects of Euphorbia Peplus.*—The following case, recently communicated to the Academy of Sciences by Dr. D. BERNARD, will illustrate the disastrous effects which may result from the empirical employment of the indigenous Euphorbiaceous plants: A lady, following the advice of an old woman, cut some stems of *Euphorbia Peplus*, and applied the milky juice flowing from them to her already swollen gums. Instantly her mouth became so much inflamed that the doctor, when he saw his patient, thought that the inflammation was due to the action of mercurial medicines. For several days the pain was intolerable, and wrung cries from the patient, who, deprived of sleep and unable to drink, was a prey to indescribable agitation. By the aid of lotions, combined with emollient and opiate injections, and by the employment of revulsives and laudanumized poultices, and assisted especially by time, the action of the caustic became weaker, the inflammation gradually diminished, and at the end of eight days the cure was nearly complete."—(*Journal de Médecine de Toulouse* and *Phar. Jour.* and *Dublin Med. Press.*)

"*Phenomena Attending the Amalgamation of Zinc, Cadmium, and Iron.*—M. J. Regnault has observed that the amalgamation of zinc with mercury is always attended with a diminution of temperature. (*Comptes Rendus*, t. xli. p. 778.) Thus, when zinc and mercury at 10° C. are mixed in a tube, a thermometer placed in the mixture sinks to 7·5°. The amalgamation of iron is also attended with a condensation of heat. But when cadmium is amalgamated the temperature rises—a mixture of the two metals at 10° rising to 13°. The above facts, the author says, explain how it happens that amalgamated zinc is more electro-positive than zinc alone, and amalgamated cadmium more electro-negative than cadmium itself. Zinc becomes electro-positive becauses it fixes heat in combining with mercury; and cadmium becomes electro-negative because it parts with heat under the same circumstances. Amalgamated soft iron and steel also was found to be electro-positive relatively to the non-amalgamated metal. Tempered steel is proved by experiment to be electro-positive relatively to the same steel untempered, and, applying the above results, the author supposes that the latent heat of tempered steel is less than that of untempered, and this, he thinks, may be the cause of its remarkable mechanical properties."—(*Chem. News.*)

MISCELLANY.

The Paris correspondent of the *Lancet* writes: "A French chemist, M. Fordos, has lately attempted, and with success it would appear, to ascertain the nature of the principle which gives to the pus of certain abscesses a blue color. This principle has been supposed by some chemists to be a modification of the green coloring matter of the bile, or of the bluish ingredient occasionally detected in the urine; but M. Fordos maintains that it has no connection with either. The means by which this gentleman has succeeded in isolating this principle may be interesting to some of your chemical readers, and I therefore give them as briefly as possible. The linen stained with this peculiarly tinted pus is soaked for several hours in water, to which a small quantity of solution of ammonia has been added. A liquid of a light bluish-green hue is thus obtained. Chloroform is added to the solution, and the blue principle, together with the yellowish foreign matter (producing the green tint,) is extracted from the water. The chloroform is then drawn off, filtered, and evaporated. To the residue is added distilled water, which takes up the coloring principle, leaving the fatty material. A second admixture of chloroform is effected, and the ethereal solution is again drawn off, filtered, and evaporated as before. Thus are obtained the blue principle and the yellowish material. A few drops of hydrochloric acid are added, which redden the blue principle, and the chloroform then dissolves the yellow matter, leave ing untouched the blue, which is triturated with carbonate of baryta, in order to get rid of the acid, and is on evaporation of the chloroformic solution deposited in prismatic crystals of a beautiful blue color. These crystals are soluble in water, alcohol, ether, and chloroform; and the solution is reddened by the addition of an acid, the original tint being restored on the further admixture of an alkali. This principle M. Fordos has called Pyocyanine."

It is stated (*Ibid.*) that "M. Mathieu read a few days ago, to the Academy of Sciences, a memoir on a preparation which he calls Hæveone, from the plant *Hævea Guyanensis*, whence it is obtained. If all that M. Mathieu has told that learned body on the subject of this fluid—the chief object of which is to prevent the oxydation of steel—be confirmed by experience, great service will have been rendered, not alone to surgery, but also to the arts in general. The merits of this vegetable juice consist, not only in its faculty of preventing rust when lightly spread on the surface of a metal, but also in its power of permanently preventing friction in the working joints of machinery, as it never dries, never loses its oily consistence, and is never decomposed. Moreover, being perfectly waterproof, it is likely to enter into competition with caoutchouc and gutta-percha in the manufacture of macintoshes and such like rain-excluding garments."

Braithwaite's Retrospect gives the following summary of a paper by M. Becquerel on the treatment of obstinate neuralgia by electricity: "It is well known that if an intense current of electricity be applied in the course of a nerve, its sensory power is benumbed for a time, and the same result follows if the nerve is the seat of neuralgic pain. After a time the pain returns, but on repeating the electrization the recurrence follows each time at longer and longer intervals, until finally a cure is effected. Sciatica, lumbar, intercostal, crural, and trifacial neuralgia may be thus treated successfully. Nineteen cases of sciatica, many of them, old standing and obstinate cases, have been cured by this plan of treatment."

In the course of a notice of MR. DIDAY's application of the common lucifer as a caustic holder, *Championnière's Jour. of Pract. Med. and Surg.* gives the following in relation to its employment in the treatment of some of the affections of the mouth. It is obvious, however, that a caustic holder may be readily extemporized out of any suitable material which may be at hand. "Lucifers are most convenient for cauterization so frequently necessary for ulcerated condyloma within the mouth. But no other instrument is so well adapted to the treatment of the fissures commonly observed on the dorsal aspect of the tongue. These fissures are usually deep and narrow, their edges hard and difficult to part, and their fundus is often the exclusive seat of ulceration, and most requires the action of the caustic. Under such circumstances the inferiority of other means of cauterization can easily be conceived. Lunar caustic would unnecessarily burn the healthy edges; lint impregnated with an active solution would exhaust its power upon the outer surface, without reaching the bottom of the fissure, which a common painting-brush would probably penetrate more completely were it not too soft and liable to bend in the sinuses without touching their innermost part. 'Try the lucifer,' says Mr. Diday, 'give its point a dihedral form, moisten it with pernitrate of mercury, and I promise you will be surprised at the promptness, ease, and efficacy with which you will succeed in applying the remedial agent to all the folds and divisions of the ulcerated tracts. I usually find two or three such applications, carefully made, sufficient to subdue these affections, which are so obstinate and so rebellious to mere internal medication.' The match is again a most convenient and valuable appliance for the treatment of erosions of the gums, and more especially of those ulcers, situated in the neighborhood of the wisdom tooth, which overlap the posterior half of the last molar. This painful detachment of the mucous membrane almost assumes the proportions of a sinus, and must remain incurable so long as the practitioner, trusting to lunar caustic and to escharotic powders, remains as it were on the threshold of the ulcerated excavation. With a common dressing-case forceps seize a lucifer steeped in muriatic acid, and insert it beneath the swollen and ulcerated membrane. This little caustic holder is well proportioned to the size of the cavity to be modified, and is especially appropriate, as its rigidity allows of the mucous membrane being raised while it is cauterized, so as to avoid injury to the dental surface; thus the surgeon can spare the tooth, and at the same time act powerfully on the ulcer."

The *Dublin Med. Press* gives, upon the authority of *La Espano Medica* and *Brit. Med. Jour.*, the following abstract of a case of subcutaneous resection of the inferior maxilla: "A Spanish surgeon, DR. FERNANDO CASTRESANA, lately extracted a sequestrum, which involved nearly one-half of the inferior maxilla, from a child aged nine years. The bone was removed from the interior of the mouth; the operation was unattended by hæmorrhage; recovery was rapid; and there was no subsequent deformity."

According to the *Gaz. des Hôp.* and *Brit. Med. Jour.* (*Ibid.*,) "the following treatment is recommended by Dr. Calvy, of Toulon, for the neuralgia proceeding from carious teeth. The carious cavity is first to be cleaned out, and then a piece of cotton, steeped in a solution of six grains of acetate of morphia in an ounce of nitric acid, is to be applied to its interior. As soon as the caustic penetrates into the carious tooth, the pain ceases, and the patient is cured. After the application of the caustic, the cavity should be filled with cotton steeped in the sedative solution of opium, and afterward permanently plugged."

In a letter to the *Am. Jour. of Sci.* and *Arts*, Mr. Jerome Nicklès makes the following instructive remarks on the subject of Chemical Synthesis. "The most remarkable scientific event of modern times is the publication of a treatise on chemistry, proceeding on the same plan in organic chemistry, as has been adopted for a century past, in mineral chemistry, that is, forming organic substances *synthetically* by combining their elements by the aid of chemical forces only. The author who has performed his demonstrations by this method is Berthelot, who has been occupied with organic synthesis since he first devoted himself to chemistry. Berthelot is not a *vitalist*, (see our last contribution;) he is convinced that 'we may undertake to form, *de novo*, all the substances which have been developed from the origin of things, and to form them under the same conditions, by virtue of the same laws and by means of the same forces which nature employs for their formation.' Let us hasten to add a distinction upon which Berthelot properly insists and which it is necessary to recognize, between organs and the matter of which they are composed. 'No chemist pretends to form in his laboratory a leaf, a flower, a fruit, or a muscle; these questions relate to physiology:' and it was by not observing this distinction that it was possible to form that school of medicine of which mention was made in my last communication, and which referred everything to vital force. (See *Journal de Chimie et de Pharmacie*, September, 1860.) This distinction being admitted and calling to mind the syntheses recently effected, such as the direct preparation of C^4H^4 from carbon and hydrogen, and alcohol from the union of C^4H^4 and water, we may understand the possibility of performing for organic chemistry what has been done for mineral chemistry, and to give to it a basis independent of the phenomena of life."

A correspondent of the *Am. Druggist's Circ.* gives the following as a good formula for the production of local anæsthesia to mitigate the pain in extracting teeth. He says that he has used it often and finds it answers the purpose well. It is obvious, however, that it should be employed with great caution, as the active ingredients are potent sedatives, and may produce dangerous constitutional effects if applied freely to the mucous surfaces of the mouth: "℞ Chloroform, ℥iss; Tr. Aconite, Spts. Vini, āā ℥i; Morphia Sulph, grs. viij; lint moistened with the above mixture, and applied to the gums about the teeth to be extracted, will destroy the sensibility sufficiently to allow the tooth or teeth to be drawn without pain."

In relation to a compound for welding cast steel, which was sent to the editor of the *Circ.*, Mr. F. F. Mayer says it "is simply coarsely powdered borax, which has been stirred up with a thin paste of Prussian blue, and left to dry. The combination is a very good and rational one."

In the course of an article on the laryngoscope, (*Am. Med. Times*, March 16,) Dr. W. H. Church gives a drawing, and the following description of a new instrument for depressing the tongue: "It occurred to me that a spatula might be so arranged as to fasten upon the lower jaw and retain itself in situ, at the same time depressing the tongue. I described my wishes to Mr. Stuhlman of the firm of Tieman & Co., who furnished me with this instrument. A piece of hard rubber or metal is shaped like the lower jaw, from which an arm with a hinge joint runs up to the level of the teeth; to this is attached a spatula. After introducing the spatula into the mouth, you turn this screw, which depresses it, forcing the tongue downward and forward; with this the mouth may be opened and shut without the slightest inconvenience or displacement of the instrument."

The following description of the denture of the sloth is given in Cassell's Nat. Hist.: "The sloths have no incisors, but canines and molars only; and in the Ai the canines are diminutive, and in all respects very similar to the other teeth. There are eight molars in the upper jaw, and six in the lower: four and three on either side respectively. They are cylindrical, unrooted, consisting, as Owen has shown, 'of a centre of vascular dentine, or ivory, the whole enveloped by a layer of cementum, characterized by numerous minute calciferous cells.' Ill fitted for grinding the food, the teeth merely bruise it, or break down the tender leaves and buds; their deficiency being probably compensated for by a singular complication of the stomach, which is sacculated."

In the course of a eulogistic notice of Dr. Wm. J. Barbee's work on the "Physical and Moral Aspects of Geology," a writer in the *Nashville Jour. of Med.* quotes therefrom the following on the geological distribution of shark's teeth: "Some years ago I examined with care a great many fossil shark's teeth from the tertiary beds of South Carolina. Similar fossils have been found all over the world, in the same beds—nowhere else. Soon after my examination I came to Mississippi, to the capital of the State. Walking out one evening, I picked up a shark's tooth from a marl bed. Without any hesitation I determined that I was walking on tertiary land. And such is the fact. The reading of Mr. Lyell's visit to the United States confirmed my judgment. He shows that the whole region of Central and a part of Southern Mississippi belongs to the Eocene tertiary."

In the report of the proceedings of the Esculapian Society of Illinois, (*Chicago Med. Jour.*, February,) it is stated that "Dr. Stormont read a paper on the use of anhydrous sulphate of zinc, as a caustic, in the treatment of malignant and semi-malignant ulcers; claiming for it escharotic properties equal to arsenious acid or chloride of zinc, but free from all the objections which apply to these; it being perfectly safe, easily managed, and its application attended with far less pain than other powerful escharotics known."

The following, from an able address before the Phila. Co. Med. Soc., by Dr. Remington, the retiring president, affords a graphic summary of the deleterious effects of alcohol upon the human economy: "The passion for indulgence in intoxicating drinks, when once acquired, by habit becomes irresistible, though at first offensive and revolting to the taste; and the poor inebriate, given up to his own insatiate cravings, is doomed to a life of endless misery, degradation, and woe. Alcohol is a poison of intense activity, and kills in large doses rapidly, in smaller doses more gradually, but none the less surely. It produces fatty degenerations of the liver and other organs; cirrhosis, diseases of the brain, apoplexy, delirium tremens, epilepsy, insanity, fatuity; diseases of the lungs, heart, and arteries; of the stomach and bowels; kidneys and skin; gout and rheumatism; dropsies, palsies, scrofula, premature decay, to which black list of incurable penalties we might add *suicide* and *murder*, when we should only have a tithe of the miseries and sufferings more or less directly caused by alcoholic drinks."

In a notice of the transactions of the Ohio State Med. Soc., the *Cincinnati Lancet and Observer* says that "The Effects of Chloroform upon the Intellectual Processes is the title of a very valuable report by Dr. Thos. L. Wright, of Bellefontaine. Dr. Wright has discussed the subject with the spirit of a philosopher, and his argument will be read with a great deal of interest. The whole paper, which is quite lengthy, is summed up with several propositions, the most important of which are: '5th. The evidence of a person respecting transactions that occur to the mind while partly conscious, is always liable to the most monstrous fallacies, and it should not be received as sufficient proof of any fact. 6th. Evidence of females respecting rape upon themselves while unconscious from chloroform, is particularly liable to suspicion.'"

In an interesting letter on the surgical practice of the Vienna Hospitals, the correspondent of the *Brit. Med. Jour.* thus writes (*Med. News*) on the subject of phosphor necrosis: "An affection of the bones, of which we happily see but little in this country, comes daily before the notice of those attending the surgical wards of the Viennese hospitals; it is the peculiar form of necrosis developed in the upper and lower maxillæ by exposure to the fumes of phosphorous acid. This disease is now even in Germany much less common than formerly, owing to the employment, in the manufacture of lucifer matches, of the red allotropic form of phosphorus, which does not undergo slow combustion in the air. Indeed, almost all the examples of these unfortunate sufferers who now present themselves are from some few manufactories where, from a false economy, the ordinary form of phosphorus is still made use of. The treatment of this affection is removal of the diseased bone; and from the cases that I saw in Vienna, I conclude that there surgeons consider extirpation of the whole bone necessary."

The editor of the *Chemical News* gives the following method of cleaning tarnished silver. It should, however, be borne in mind that the agent recommended is a powerful poison, and must therefore be employed with care. "The following plan is very successful in removing tarnish, grease, and other objectionable matter from silver and plated goods: Make a solution of one part cyanide of potassium in six parts of water, dip a soft hog's-hair brush into the liquid and gently brush it over the edges, handles, and feet of mounted work—such as cruet frames, candlesticks, etc.; then rinse the article in water; now dip a piece of flannel in the solution and pass it lightly over the polished surfaces so as not to scratch them. The cyanide will at once remove the tarnish, when the article must be well rinsed: now dry it and apply a little powdered rotten-stone in the usual way, finishing with rouge. Gilt or gold goods may be cleaned by dipping them for an instant into the strong solution, and then well washing them with hot soap and water, applied with a soft brush."

In regard to the preparation of chloride of gold it is stated (*Ibid.*) that "according to M. Fordos (*Repertoire de Chimie pure et Appliquée*, liv. xii. p. 373, 1860) it is impossible to obtain a neutral chloride by dissolving gold in aqua regia, and evaporating the liquor to drive off the excess of acid. By this means, says the author, a hydrochlorate of hydrated chloride of gold, $AuCl_3HCl + Aq$, is produced, which is the compound ordinarily met with in commerce. When this is heated, even in a water bath, to drive off the last equivalent of hydrochloric acid, protochloride of gold is produced, and the salt obtained is not completely soluble in water."

In his gleanings from German journals for the *Am. Jour. of Pharmacy*, Mr. J. M. Maisch gives the following on emery: "The trade in emery is not, as formerly, monopolized by the Greek government, which now levies a tax of 5 drachms per hundred weight when exported. Other hard minerals are sometimes fraudulently substituted for it, to detect which, and to determine the value of the emery, the following method is employed in Smyrna: A plate of glass of known weight is rubbed with a certain quantity of the emery until it has no further effect; the lighter the glass has become, the better is the quality of the emery. The emery diggings of the government are on the island of Naxos. A ferruginous clay silicate has lately been discovered upon the island of Skyno, which is not inferior in hardness to emery."—(Wittst. V. Schr. ix. 535.)

The *Sci. Amer.* says that "to distinguish steel from iron, let fall a drop of dilute nitric acid upon the surface of the metal; it produces a dark-gray spot on steel, and a green one on iron."

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Character of Sulphuric Ether as an Anæsthetic. Since the practicability of producing a state of general insensibility by inhalation has been demonstrated, it has become a question of vital importance to determine the relative value of the different agents which induce this condition of anæsthesia. In order, therefore, to speedily settle this question, it is desirable that some more general and concerted effort should be made to collect all the existing knowledge upon the subject. A movement in this direction has been made by the Boston Society for Medical Improvement, in the appointment of a committee to inquire into the alleged deaths from inhalation of sulphuric ether. This committee has issued a circular, which we give entire, in the hope that all who read it will communicate whatever information they may possess upon this highly important matter.

"Boston, Massachusetts, U. S.

"The question of the entire immunity from danger which is claimed for Anæsthesia produced by Ether, being still under discussion, the Boston Society for Medical Improvement has appointed the undersigned a Committee 'to investigate the alleged deaths from the inhalation of Sulphuric Ether, and to report thereon.'

"They would therefore request the Medical Profession, or any person into whose hands this may fall, to communicate to either of them such cases, coming within their own observation, as shall serve to this end; giving the place, time, and circumstances of their occurrence, with the mode of inhalation adopted, and, especially, information in regard to the following points:—

"1st. *The kind of Ether used, whether pure Sulphuric Ether, Chloric Ether, or Ether combined with Chloroform.*

"2d. *The period after inhalation at which death occurred.*

Also any other facts which may enable them to form an opinion on the subject of their investigations.

"Richard M. Hodges, M.D.
"George Hayward, M.D.
"Solomon D. Townsend, M.D.
"Charles T. Jackson, M.D.
"J. Baxter Upham, M.D.

"February, 1861."

THE

DENTAL COSMOS.

NEW SERIES.

Vol. II. PHILADELPHIA, MAY, 1861. No. 10.

ORIGINAL COMMUNICATIONS.

Entered, according to Act of Congress, in the year 1860, by Jones & White, in the Clerk's Office of the District Court for the Eastern District of Pennsylvania.

TREATISE UPON THE GENESIS AND DEVELOPMENT OF THE DENTAL FOLLICLES TO THE EPOCH OF THE ERUPTION OF THE TEETH.

BY DRS. CH. ROBIN AND E. MAGITOT.

[Translated for the Dental Cosmos, from the "*Journal de la Physiologie de l'Homme et des Animaux*," Dr. E. Brown-Séquard, editor, by E. Sureau.]

§ 3. *The exterior characteristics of the dental follicles during the first phases of their evolution.*—During that short period of its existence, when the nascent bulb is not yet surrounded by the follicular wall, it is too small and too transparent to be seen by the aid of reflected light; but it can be perceived by transmitted light, in the shape of a grayish, conical point with diffused outlines, when the sub-mucous tissue is placed between two plates of glass. When the wall is once formed, and we completely detach the mucous tissue by dissection, or if we only raise it upon one of the sides of the fœtal gum through the whole of its length, we can see those follicles, the half of whose height extends beyond the edge of the groove. We can see them still better, if one of the walls of the groove is lifted at the same time.

They then present themselves below the mucous membrane under the form of a trail, or series, of small ovoid or globular grains, which are a little flattened on their two internal and external faces; and in the case of the largest molar, they are from one-third or one-half of a millimetre to three or four millimetres in their largest diameter. Their surface is smooth, brilliant, grayish or reddish, according to the degree of congestion of the vessels.

These small globular bodies are, as it were, gelatiniform, and have a very particular resistance and semi-transparency, which trenches upon the more reddish appearance of the soft, sub-mucous laminated tissue, which with them fills the groove, and in which they are immersed. As this tissue adheres less to the groove than it does to the mucous membrane, it can be drawn away by pulling upon the latter, and it brings with it the follicles intact. The microscope shows that these last are not in continuity of substance with the mucous membrane, from which they are separated by a certain depth of sub-mucous tissue. They can also be isolated from each other without rupture. The separation between them is proportional to the difference between the teeth of the several animal species, and to their own proper size. Indeed, as they enlarge they finally touch each other, except by the interposition of a remnant of sub-mucous tissue which occurs wherever the partitions of the grooves are yet unformed, as, for example, between the follicles of the three molars at the time when the human fœtus has attained its full growth.* They then become contiguous to the mucous membrane, and adhere to it quite strongly.

The bottom of the largest follicles directly touches the fasciculus of the nerves and vessels in the lower jaw; the dental canal of this jaw is not formed at the period of birth. Here the nerve is above, and the artery and vein below, separated occasionally from the nerve, at the level of the two last molars, by a thin osseous partition beyond which they enter into the groove. As to the nerve, it is placed under the last follicle of the molars, adhering to it as soon as it has traversed the posterior dental foramen.†

When the follicles increase in size they each gradually assume the general shape of the crowns, which will subsequently belong to the tooth, with the difference that the outlines are round and not angular; in consequence of this difference the follicles of the canines and incisors are nearly ovoid at the blunt extremity; while those of the molars are almost globular, or polyhedral on the round sides, and slightly convex faces. Even when the production of the ivory has commenced, and is slightly perceptible under the form of white spots through the wall of the follicle, this wall is always soft, but it has also a particular kind of resistance, which resembles that offered by a distended leather bottle.

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* Hunter has already noticed that in the fœtus of three and four months the *alveolar process* is only a longitudinal groove, and that the vessels and nerves proceed along its bottom in a slight furrow, which afterward becomes a distinct and complete osseous canal. He also noticed that the crests which are destined to form the partitions extend across the canal, starting from the sides, and at first from the anterior part of the jaws. (Hunter, Treatise upon the Teeth, 1771.) We have already said that his successors have generally disregarded these facts. Consequently, according to Bischoff, the dental ledges become thick during the first half of the third month, and he says that *a series of round fibrous vesicles are formed there*, which are separated from each other by a compact and granulated substance. *This substance ossifies at a later period and produces the alveoli*, while there originates in the vesicle a small sack, in the bottom of which rises a small papillary projection. (Bischoff, Treatise upon Development.) We have already seen that these phenomena do not occur in this way.

† This fact has already been exactly described and represented by M. Serres. (*Essai sur l'anatomie de la physiologie des dents.* Paris, 1817. 8vo. p. 117 and fig. 8, Pl. IV.)

§ 4. *The follicular wall, in particular.*—The follicular wall (Pl. I., fig. 1, *k*) is fibrous and quite resistant in proportion to its thickness. This varies in the several species of animals. At the time of the first appearance of the ivory, the wall is only four-hundredths of a millimetre in thickness in the hog, in which animal this wall is much easier broken than it is in other species. At the same time it is about double this thickness in the ruminating animals, in man, and in the carnivora. The wall is composed of laminated fibres arranged in sheets rather than in fasciculi, accompanied by a great number of fusiform fibro-plastic bodies, with a certain quantity of interposed amorphous matter, and of embryo-plastic nuclei.

It has at this period very clear outlines, the interior of which is marked by a dark line, which is very distinct upon the paleness of the surrounding tissue. The space which separates the inner face of the wall from the surface of the bulb has increased considerably. The transparent tissue of the organ of the enamel, which fills this space, distends the follicle, which assumes a more or less globular form, when the happy chances of preparation succeed in isolating it completely from the whole surrounding tissue.

The system of vascularization in the follicular wall is very remarkable, (Pl. II., fig. 3,) and is easily observed upon the fresh embryos. The vessels emanating from the dental branch destined to each tooth spread into the wall, from its base to its summit. The blood is not brought by a single trunk, for we can count in the incisors or the canines two to three arteries and as many veins.

These vessels are not contiguous, and their dimensions vary according to the different epochs of evolution. In the human embryo of 80 to 100 days, and in the calf and lamb of six or seven weeks, the largest of the vessels does not reach a diameter of 0·1 mill. At a more advanced period, they become readily visible to the naked eye. The vessels slightly diverge from the base of the follicle, and are subdivided for distribution equally through the whole extent of the wall. Near the middle of the follicle these vessels form a first order of polygonal meshes, which are a little larger in the vertical direction than they are transversely. The meshes have a diameter from three to six times greater than that of the capillaries which limit them. The vessels are a little flexuous when they approach the gingival portion of the follicle, where they are subdivided into ultimate capillaries, and become parallel to the great axis of the follicle. In their last passage, they are anastomosed transversely from space to space, forming meshes which have a great longitudinal diameter, and which as a whole present a very elegant appearance. These meshes are very narrow; their width being scarcely once or twice, and rarely three times, that of the limiting capillaries. Their greatest diameter is, on the contrary, four or five times larger. When, finally, these ultimate vascular ramifications reach near the summit of the follicle, they converge and anastomose, and blend with the capillaries of the mucous membrane, by the mediation of the sub-mucous tissue, which is less vascular than the follicle. As to the vascular system of the mucous membrane, which afterward becomes the gum, it is easy to prove that it is as rich as that of the follicular walls; but the meshes affect an angular, polygonal shape with flexuous capillaries, which gives to the whole net-work a very different character from that of the follicular wall.

There is no sensible difference of vascularity between the follicles themselves. The capillaries are only more easily observed and followed in the incisors and canines than they are in the molars. In the latter, indeed, the great thickness of the organ prevents us from seeing the capillaries except on the edges or in the neighborhood of the summit, while some of the follicles of the incisors can be so prepared as to embrace on their wall the whole extent of the vascular system.

Thus, the vessels of the follicular wall are distributed in a peculiar manner—their parallelism to each other and to the axis of the follicle, the form of the meshes elongated in the same direction, and their transverse anastomoses give a characteristic aspect to the whole of these networks. The same particularities are observed, without any sensible differences, in the follicles of the hog, calf, and lamb.

The follicular wall does not maintain the preceding characters during the whole period of its existence. It gradually increases in thickness, it becomes less transparent, of a more whitish gray exteriorly, and more red within, for the reason that its texture is a little changed. At no epoch in the evolution of the follicle does there originate two walls, or envelopes which can be separated from each other by dissection, or by other process. This arrangement is especially obvious when the follicle fills the portion of the groove in which it lies. During the continuance of these phenomena, the vascularity of the inner face of the wall becomes still more decided than at the anterior periods, as we have shown. At this time it is of a deep red, owing to the fact that the meshes have become still more narrow than they were, and the capillaries which limit them elegantly undulated, with closer waves. In addition to this, in man and some other mammiferæ, they are prolonged into the bodies of little microscopic folds which form the inner face of the wall, and which project into the corresponding depressions of the organ of the enamel.

There they are still more flexuous and, in places, folded back upon themselves in very elegant windings; and sometimes forming small agglomerations of capillaries, which are found, however, throughout the whole extent of the wall itself. They are the most abundant elements of these folds or prolongations, which are scarcely one or two-tenths of a millimetre in length, and resemble under the microscope flat villosities; these capillaries are accompanied by laminated fibres. The face of the follicular wall is contiguous to the organ of the enamel;* it is nevertheless separated from it by a bed of epithelium, consisting of a single range of very small cells in spherical nuclei, which extends to the furrow that forms the wall by uniting with the bulb; and, consequently, it extends to the edge of the range of cells of the enamel. We will return, however, to this point in the following chapter.

§ 5. *Of the dental bulb, in particular.*—The size of the dental bulb increases rapidly as long as that part of it which is turned toward the mucous membrane is not entirely covered by the ivory. The increase in the size of the follicle is in some degree proportional to that of the mass of that organ. This enlargement soon becomes less in the base of the bulb, at the level of its junction with the wall, as above mentioned. In consequence of this, it remains narrower at that point than near the middle, or near the opposite side; it appears to be contracted, although this may not be the case, but at this level may have acquired a volume relatively less.

The projecting part of the bulb always remains separated from the deep face of the follicular wall by the organ of the enamel, which has increased still more in extent. It has also lost its conical shape and assumed a new one, which varies for each species of tooth. The bulb of the incisors, (Pl. I., fig. 1, *a*,) after having increased in width at the level of its free edge, is disposed in bevels, or rather, in angles; the edge becomes slightly undulated, forming three small swellings which are separated by two small depressions. This undulation, which is elsewhere very regular, is afterward reproduced in the crown of the tooth, which, as we have seen, is moulded exactly upon the surface of the bulb. The bulb of the canine (*c*) preserves its conical form a little flattened in one invariable fashion; this is equally the case in the canine tooth itself: it exhibits consequently the form of a pyramid slightly flattened from before backward, and a little swollen near the middle.

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* After this time this face is no longer provided with an amorphous bed exceeding its own elements; it is more dense at the surface than it is below, and it can be isolated in certain conditions, as it can be done on the surface of the bulb. It can also be seen that there is nothing here which can be compared to the serous membrane. This fact is directly contrary to that which has been admitted hypothetically by Bichat, Raschkow, M. Oudet, (1835,) and other authors. The above vascular prolongations were observed by Goodsir, (1838,) and Huxley, (1853,) but they have exaggerated the analogies between them and the intestinal villosities. Thus, there is not originally two proper coats for the follicle essentially different from each other, as many authors have admitted—one of the coats being fibrous, and the other serous or internal. We will see hereafter that it is from the mucous membrane that the wall of the follicles of the permanent teeth principally receive their vessels even to the period of eruption.

As to the modifications which the molars (*d e*) undergo, whatever may be the number of their tubercles, they appear in consequence of a series of changes, which are all effected in the same manner; conical at the blunt summit, and a little elevated as was the bulb, it soon passes into a very different shape. Its width becomes very much greater in consequence of the gradual enlargement of the base, without the height being proportionally increased. This enlarged base is surmounted by a blunt point, which is the trace of the primitive papilla of origin. This is not found in the centre of the free surface of the bulb, but either entirely upon the circumference contiguous to the follicular wall, or on a point very near to that circumference. This projection continues single, as we have already stated, only during a very short time. A point in the free part of the bulb beside this projection, gives birth to one or two others, and, following the teeth, to three others, which are single or in pairs according to the sharp or flat tubercular form of the crown of the teeth. These projections soon resemble the first, except in size. These new ones commence under the form of embossments, the nature of which cannot be distinguished at first sight, when they are observed for the first time, and at the beginning of the development; but all the phases of their changes can be readily followed in pieces which exhibit the different degrees of evolution. The projections soon assume, in a manifest manner, the form of papillæ, whose summits do not at first reach the same height. These papillæ become developed in length and breadth, and the bulb, as a whole, soon represents in its turn the shape of the future crown, with differences in length which are very remarkable between the different species of animals, and are in proportion to the differences of form and size of the projections of the crown. At a later period, each of the small primitive pieces of dentine appear at the summit of the papillæ, and, uniting among themselves, reproduce, as a whole, the multitubercular form of the bulb. (Pl. I., fig. 1, *m.*)*

(To be continued.)

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* By an examination of the contents of a groove exhibiting follicles in different degrees of evolution, it is easy to demonstrate that the bulbs of the molars do not originate by as many fractions of bulbs (each of which primarily resemble those of the incisors) appearing in groups, and afterward consolidated into one common mass marked with eminences, as is the opinion of M. Guillot. (*Loc. cit.*, 1859, vol. ix. p. 292.)

A SUGGESTION.

BY PROF. J. RICHARDSON.

When we affirm that it is legitimately a part of the mission of those now engaged in the cultivation of dental science to *educate* the medical profession in regard to many important points relating to general practice, we assume that the *truthfulness* of the expression will justify its apparent *egotism.*

The practice of medical men, with rare exceptions, reveals, almost daily, a lamentable want of appreciation of those important pathological indications so frequently furnished by diseased conditions of the dental organs, as well as failures to recognize the positive dependence of serious and oftentimes fatal maladies upon these primary sources of morbid action. That this is so, is no just disparagement of the medical practitioner, for there are obvious reasons why he should be at fault where the teeth are concerned. His vindication is complete in the fact that the present instrumentalities employed as means of imparting a medical education afford no adequate opportunities for the acquirement of the truths and facts so amply revealed, by observation and experience, to our own profession. The medical student during his term of pupilage is restricted to such sources of instruction as, by the usages of the faculty, are presented to him, and these are comprehended in the oral instructions of preceptors, the teachings of medical text-books, and in medical lectures and hospital clinics. In the office of his preceptor he makes no progress in a knowledge of our department beyond what he may glean from his books. The preceptor rarely repairs, by study, the defects of his own education in respect to the teeth, and he could not reasonably be expected to impart information to his pupil of which he was not himself possessed. However diligent the student may be, he will advance but little beyond a somewhat meagre knowledge of dental anatomy and histology by consulting any strictly medical treatise that is likely to fall in his way; and as to dental pathology, all accessible information is chiefly embraced in accounts of the local and constitutional disturbances incident to *teething.* The multiform affections connected, either immediately or remotely, with diseased conditions of the teeth are practically ignored. Neither will he find, in the elementary works which are accessible to him, any facts worthy of attention concerning dental therapeutics or hygiene. Thus the medical student passes from his preceptor and office studies almost wholly unconscious of any truths in dental science that would serve him any useful purpose in practice. He next enters a medical college, and here, as elsewhere, whether in attendance upon didactic lectures or hospital clinics, the same silence prevails upon this important specialty; and, finally, with the indorsement of the school, he goes to his field of labor profoundly ignorant of what he must sooner or later discover it is eminently his interest to know concerning diseases of the teeth in general practice.

If, therefore, the educational appliances just enumerated fail, as they manifestly do, to confer upon the medical student and practitioner a knowledge of this department commensurate with its just demands, there is a plain obligation resting upon our young but advanced profession to supply this *hiatus* in medical teaching. That such a contribution would be received with great favor by the mass of medical men in active practice there is not a doubt, for whatever their deficiencies in a knowledge of this specialty of pathological science may be, they arise not so much from indifference to the subject, or the neglect of opportunities, as from a want of accessible means of instruction. Ample sources of information exist in dental works, and in current dental literature, but the material proper for appropriation is obscured by such a mass of matter wholly foreign to the requirements of the medical practitioner, that the latter has neither the time nor the courage to go on a voyage of discovery through whole volumes, to sift out here and there a fact that might profit him in practice. It is only those physicians of acknowledged industry who, enjoying a full or even fair practice, are able to post themselves in the constantly accumulating facts of their own current literature, and hence, whatever is presented to them relating to those specialties which embrace in their study much (to them) irrelevant or immaterial matter, should be so disencumbered, epitomized, and arranged, as to command their attention from its obvious practical nature and direct application to their wants.

In the nature of things, it is improbable if not impossible that any one person or association of persons not practically conversant with diseases of the dental organs and their influences as immediate and predisposing causes of disease in other parts of the organism, could adequately meet the requirements of general practitioners; hence it becomes the dental profession, as the great repository of the facts and principles of dental science, to respond in some fitting manner to a want everywhere acknowledged as imperative.

The teeth sustain very intimate anatomical and physiological relations with some of the most important viscera of the body, both by continuity of structure and by nervous and vascular communication, and it would be well, for the credit of the "healing art" and the interests of humanity, that the attention of physicians should be called, in some more direct and emphatic manner than heretofore, to their diseases as predisposing and exciting causes to some of the most formidable lesions known to pathology.

It is the reproach of *curative* medical science that patients are, day after day, incontinently and fruitlessly drugged for the relief of maladies which, being purely symptomatic of or dependent on dental disease or irritation, are diagnosed and obstinately and perseveringly treated as idiopathic affections. It is the reproach of *conservative* medical science that countless numbers of teeth are, year after year, uselessly and mercilessly sacrificed through the direct agency or complicity of medical practitioners. It is the reproach of *sanitary* medical science that, while the greatest circumspection is displayed in guarding the many approaches to the citadel of health, one of the most exposed and vulnerable points, whose defense is essential to the general safety, should be left so entirely uncared for. A well-known dental writer has truly said: "Almost inappreciable are the beginnings of many fatal diseases, and could the grave reveal its secrets, I have not a doubt, when I consider the number of diseases produced by diseased teeth, that it would be found that thousands are there in whom the first fatal impulse was given by a diseased state of these organs; and could I raise my voice so as to be heard by every medical man in America, I would say to them, attend to your patients' teeth; and if they are diseased, direct such remedies as shall restore them to health; and if in health, such means as will keep them so."

The inquiry here naturally presents itself, what mode of communicating with the medical profession will best serve to enforce the admonitions and instructions so happily expressed in the above quotation?

Various means offer themselves for our consideration. Intelligent dentists may, and already have accomplished much through the opportunities afforded by personal and professional intercourse with physicians. It is, in a large degree, in this way that the present interest in the subject, and increasing desire for farther information, has been awakened in the minds of medical men. But, while we are not insensible to the advantages of personal communication in eliciting facts of value to the general practitioner, every dentist's influence being localized and his opportunities for consultation limited, the communication of the necessary knowledge, even in its aggregate application, is too insufficient and circumscribed to satisfy the wants and expectations of our medical brethren.

The publication of office pamphlets or tracts, while they may be profitably employed to instruct the popular mind, are, for obvious reasons, wholly inadequate to fulfill the requirement under consideration.

The establishment of a chair in medical colleges devoted to dental teaching has been regarded generally with disfavor, and, on plausible grounds, may be regarded as inadequate if not impracticable.

There remains one other mode which would seem to be practicable and effective—the publication of a systematic treatise or manual, which should embrace a full and practical consideration of such subjects connected with the teeth and their diseases as would interest and profit the general practitioner of medicine. The character of the work should be such that every physician, who is ambitious to render the highest skill to his patients, would gladly place it in his library and bring into daily consultation in his practice.

Is there any present assurance or prospect that such a treatise will be voluntarily produced within a reasonable time as the result of individual enterprise? The profession, we believe, has had no intimation of such a design. That there is a respectable number of practical dentists in this country who are competent to construct a work of the kind in a manner creditable to the profession, I presume will hardly be questioned.

That the object in view may be accomplished without unnecessary delay, and in order to engage or secure, at the earliest practicable period, the best services of those who might, on solicitation, be induced to devote themselves to such a task, we would respectfully suggest that the American Dental Association, as a body competent to act in this matter, authorize, at its next meeting, an award for the best dental prize essay or treatise constructed with especial reference to the necessities of the general medical practitioner. We have nothing to offer here in regard to the terms or conditions of the award, desiring only to present the *fact* to be acted upon. We cannot entertain a doubt but that such a work, emanating from and indorsed by such a body, would command at once the confidence and patronage of medical men. On this subject we should be glad to hear from those who have an opinion to express, and have thrown out these thoughts in the hope of engaging the attention of those members of the dental profession who have truly its interests at heart, and who have a just conception of its obligations as a co-ordinate branch of medical science.

Cincinnati, April, 1861.

ABSCESS OF THE ANTRUM CAUSED BY A TOOTH.

OCCURRING IN THE PRACTICE OF DR. J. D. WHITE; REPORTED BY HORACE MEREDITH WHITE, M.D.

Mr. S., aged twenty years, light complexion, peculiar whiteness of the skin, a characteristic of his family, had been complaining for some time of a fetid discharge from the right nostril, of heat and a sense of tension in the right superior maxilla.

He applied to his physician, who gave him a wash, with the belief that the parts would speedily return to their normal condition, he supposing the affection to be merely an increased discharge depending on a slight local hyperæmia, the result, perhaps, of the bad state of the weather at the time. The parts, however, did not recover, the discharge became much more fetid, and evidently was principally composed of unhealthy pus, though it was not as copious as it had been previously; the pain was not severe, but the heat of the parts more elevated and the sense of tension increased. The patient was irritable and pale; the heat of the body was rather above the average temperature. This was the condition of the patient when he called at the office, having been sent to Dr. White by his physician.

Upon examining the anterior nares, nothing could be discovered to account for the discharge, the mucous membrane being a little inflamed, but not sufficiently to occasion it. A diseased state of the antrum was suspected, and the mouth was examined to ascertain if a diseased tooth could be the cause. The second molar, upper jaw, right side, was unsound; part of the crown was decayed away; the bulbous portion of the nerve and the filaments in the buccal roots were dead; but that part in the palatine root was living, and occasioned the patient pain; a little arsenical paste was applied to destroy it; no signs of alveolar abscess were present in it or any other tooth. Not having time to make a fuller examination, the patient was sent away with the request to call the following day. The patient came at the appointed time; the nerve in the palatine root was removed without trouble; a careful inspection was now made, and important information was received. Upon examining the right nostril with a speculum, a little pus was seen in the middle meatus. The patient was requested to incline the head toward the left side; he did so; and upon looking at the parts again a large amount of pus was found. This, together with the facts stated already in this paper, and that there was no other assignable cause of the discharge, were deemed sufficient to establish the diagnosis—abscess of the antrum, probably caused by the unsound second molar tooth.

Extraction of the tooth was advised and submitted to. Upon the removal of the tooth no pus escaped; a probe was introduced into the alveolus previously occupied by one of the buccal roots and readily passed on into the antrum; pus now followed the withdrawal of the instrument.

Some suppose that when a tooth is drawn which communicates with the antrum in which there is pus, a discharge must necessarily follow; this is a mistake, as is seen by this case, and has been seen in many others. The cause of this may be the smallness of the aperture, or on account of the communication between the nose and the antrum becoming obstructed, by the approximation of the inflamed mucous membrane around the passage. The antrum is then like a narrow-necked bottle filled with fluid and turned upside down, no fluid escaping on account of atmospheric pressure.

It is, on this account, in a case of suspected abscess, if no pus follows the extraction of the tooth, always necessary to pass up a probe; if pus be present it will be perceived when the instrument is withdrawn.

The cavity was now syringed out with tepid water, when a large quantity of pus mixed with water escaped through the nose. The fluid was very fetid, and was received on a napkin, to avoid soiling the patient's clothes.

The antrum was syringed with tepid water for five or six days, twice a day, a large quantity of pus escaping with the water through the nose. The water was then medicated in the ratio of about five grains of nitrate of silver to the ounce at first, but was increased to about fifteen grains to the ounce; the weaker solution was used three days, twice a day; the stronger was used two days, once a day; and then, owing to the healthy appearance of the pus and its small quantity, and absence of any fetor, and also because there were manifestations of granulations forming around the orifice leading from the alveolus to the antrum, which was discovered by the difficulty of passing in the nozzle of the syringe, and when removed was found stained with blood, the injection was discontinued in order to allow the orifice to close up and prevent a fistulous communication being kept up between the antrum and mouth, and because it was thought nature was now able to carry on the process of reparation. It is a difficult thing to know when this period has arrived; the above symptoms, however, were considered sufficient. The alveolus was kept patulous by a pledget of cotton until there was a certainty of its bottom, which communicated with the antrum, showed signs of healthy granulations. This must always be recollected. The cotton should then be left out, the parts will rapidly close and fill up, as did the present case, which is now a perfect cure.

The patient was seen a few days ago and was perfectly well; he has not had an untoward symptom since the termination of the case, which was about two months ago.

It may be interesting to some pathologists to know the condition of the extracted tooth. The buccal roots were almost entirely denuded of periosteum, and very rough; about one line from their apices were found very small fragments of apparently mucous membrane, evidently that from the floor of the antrum. This was all that was of importance.

Connected with this case was a coincidence which at first greatly alarmed the patient: he had frequently visited a horse belonging to his father which had a profuse discharge from the nose and which was thought to be glanders, but the veterinary surgeon decided otherwise; and finding a carious molar in the horse's upper jaw proposed to extract it, for which he wished thirty-five dollars as a fee. The gentleman was unwilling to pay that amount, but offered to give him the horse if he cured it. To this the surgeon disagreed. The horse was then shot, which is unfortunate for *science* and *curiosity*. The horse's malady was prior to that of the patient, and caused him to fear that he had contracted the disease from it.

PHILADELPHIA, April, 1861.

AN ESSAY ON CAUSES OF INFLAMMATION OF THE PERIOSTEUM OF THE TEETH.

With Particular Reference to the Toxical Effects of Mercury and Phosphorus.
Submitted to the Faculty of the Pennsylvania College of Dental
Surgery for the Degree of Doctor of Dental Surgery.
Session, 1860-61.

BY DR. H. BRESLAUER, BERLIN.

(Concluded.)

(a) *Intoxication by Mercury.*—The influence of this metal shows itself very soon, often before the commencement of salivation, by marked symptoms indicating an affection of the odonto-periosteum of the roots. All the teeth are affected—the lower ones, however, sooner than the upper ones, as they come more in contact with the saliva, which is the bearer of the noxious matter. The teeth become loose, and, the injurious influence continuing, are lifted more and more out of the alveoli; they are, however, not painful; only on considerable pressure, a slight pain is produced. In the beginning, the mucous membrane of the mouth is affected with superficial inflammation; it becomes dry, and the patient suffers from a burning sensation. By-and-by tumefaction takes place, the periosteum of the roots having become previously affected in the same manner. The mucous membrane, commencing at the neck of the tooth, assumes a livid color, swells, and presents a grayish, œdematous mass extending over the whole buccal cavity. The teeth become finally so loose that they can be taken out of their alveoli by the fingers, or by the pressure of the tongue; they are covered with a sticky, light gray, slimy substance; the thickened odonto-periosteum presents the same appearances. The tumefaction of the neighboring parts, which implicates particularly the loose areolar tissue underneath the tongue, and the salivary glands, and which may extend over the areolar tissue of the face and head, is altogether owing to the serous infiltration; the formation of abscesses, observed in other forms of odonto-periostitis, does not seem to take place in this instance.

The swelling produced by the influence of the metal is not limited to the structures named above, but affects also the bones, particularly the alveolar processes; in consequence of it, the alveoli lose their elasticity, and finally are destroyed by absorption, so that the loss of the teeth is not owing only to the changed condition of the periosteum, but also to the affection of the bone, which often appears in the form of rapid necrosis. The many characteristic symptoms which attend this form of odonto-periostitis of the roots of the teeth render it impossible to confound it with other forms.

(b) *Intoxication by Phosphorus.*—Phosphorus causes, by the products of its evaporation, affections of the odonto-periosteum, which, on becoming more intense, present that form of necrosis known by the name of "phosphorus jaw-disease." That the fumes of phosphorus are really the cause of this disease, is not only proved by observations made on persons working in match-factories, who are subject to this peculiar disease of the jaw, but also by experiments on animals. (Vide *Bibra and Geist, The diseases of workmen in match-factories.*)

The disease consists essentially in an inflammation of the periosteum of the teeth, and of the periosteum of the jaw, which gives rise to the formation of osteophytes, and ends with the necrotic destruction of the bone. In pursuing the course of symptoms in a recent case of this disease, our attention is first arrested by a slight pain in a decayed tooth, which lasts several days; then follow the symptoms of odonto-periostitis; the tooth projects from its alveolus, and sooner than in any other case, pus is found to escape on pressing upon the tooth. With the commencing tumefaction of the periosteum of the root, the periosteum of the alveolus becomes also affected; corresponding to the circumference of it, a bulging out of the jaw-bone is observed, which extends in all directions, the prominence showing itself at first on the external, and somewhat later also on the internal surface of the jaw. As the morbid action continues, it is propagated to the periosteum of the neighboring teeth, which is also destroyed, symptoms of irritation having previously been manifested in them. If the pulps in these secondarily-affected teeth are still alive, violent pain of neuralgic character sets in, so that the return of toothache always indicates the propagation of the disease. In case the affection extends to the maxillary bone, pus is formed between the gums and the bone. If the suppuration is extensive, or if the pus finds no outlet at the above-mentioned place or through the alveoli, it is infiltrated at the superior maxilla, into the adjoining cellular tissue, or, the inferior maxilla being the suffering part, gravitates, and gives rise to a fluctuating tumor of the cheek; on opening the latter by an incision, an offensive, yellowish-gray matter is discharged, which has the same characteristics as that escaping in the mouth, and, on introducing a probe, the rough bone, destroyed by suppuration, is felt. If the fluctuating spot is not opened artificially, the pus gradually makes its way outward, with the formation of fistulous passages. (*Dr. Albrecht, Diseases of the periosteum of the teeth.*)

In this more acute course of the disease, the swelling of the bone is not considerable, the increase of its volume being about double, for the mass deposited underneath the periosteum is very soon resolved; if the new formation of the periosteum is not disposed of in this way, but becomes organized, the jaw may increase four or five times its natural size. The teeth, loosened in their alveoli, fall out; the gums appear pale and anæmic, become atrophied, recede more and more, and leave the bone denuded. In the highest stage of the affection, the alveolar process of the lower maxilla, with its greenish-gray looking alveoli, is laid bare; the alveolar process of the upper maxilla presents the same appearance; the hard palate, in its whole extent, is deprived of its covering, and the roof of the palate seems to belong to a dried skull; at the same time pus escapes from all the margins of the necrosed parts.

Nearly in all cases, fistulous passages are observed, which penetrate the soft parts in different places; their number and the amount of their discharge depend upon the greater or less quantity of pus produced at the diseased bone. If the destruction has its seat in the lower maxilla, the fistulous openings are generally found at the lower margin; if in the upper maxilla, in the region of the antrum. In cases, however, where the duration of the disease is longer, the pus often spreads to a greater extent; it makes its way to the region of the temporal bone, and escapes from the ear; fistulous passages penetrate the pars squamosa, or the matter gravitates into the mastoid process; it even travels as far as the nape of the neck. When the lower jaw is the seat of the destructive process, fistulous openings are formed at the neck, and if the matter descends still further, it may make its appearance on the anterior surface of the thorax.

If the course of the disease is acute in the beginning, the swelling attains considerable size, suppuration is established, and the destruction of the bone commenced within a few weeks from the time that the affection of the periosteum of a tooth first manifested itself by violent pain. During the more inflammatory stage, symptoms of constitutional suffering are not wanting; there is fever, loss of appetite, and constipation; the face assumes a yellowish color; the secretion of the saliva is increased the more the greater the inflammation, and the more quiet the mouth is kept on account of the pain; the quantity of saliva is, however, not as great as it appears. The symptoms disappear, and the affection assumes a more chronic course; it exists for years, the pain increasing or decreasing according as the inflammatory action preceding the necrosis is extended, or increasing as the formed matter finds outlet with more or less difficulty. If the suppuration is considerable, digestion is frequently impaired in consequence of the matter being swallowed; vomiting often takes place in the morning in consequence of pus having been swallowed during sleep. The constitution finally succumbs under symptoms of consumption.

The disease is, however, not always attended with the distinct signs of inflammatory action, but may establish itself under hardly perceptible symptoms; the affection of the dental periosteum, with which it commences, manifests itself more by swelling than by pain. The tooth becomes loose, but is not lifted out of the alveolus by a greatly hyperplastic odonto-periosteum; the swelling commences gradually at the alveolar process, and progresses slowly, but never attains a considerable size; the jaw-bone is increased about three to five times in thickness. The suppuration is small; it becomes abundant only when the deposit which causes the swelling softens, and is transformed into pus. The disease may commence with acute symptoms, and later assume the form described above.

The necrosed piece of bone is finally detached; granulations develop themselves at the healthy bone, and the reparation of the lost part is possible. (*Geist, The regeneration of the lower maxilla after total necrosis by the fumes of phosphorus*, 1852.)

The detached piece of bone, if it has not been lying bare, is generally covered with osteophytes, which are often very thin and velvet-like.

Bödecker and Bibra, who have carefully analyzed the purulent matter discharged in necrosis from phosphorus, have found a large quantity of phosphatic fat in it, the amount of phosphorus being, in fact, six times larger than has been found in any other fat. Bödecker discovered chlorodinic acid in it in considerable quantity; tested by hydrochloric acid in a solution diluted with water, it assumes a rose color; in concentrated solution, a dark-red color.

A participation of the whole organism, a dyscrasia produced by the fumes of phosphorus, does not seem to be brought about. The yellowish color of the face and the collapse are partly attributable to the pain, partly to the drain upon the system, and to the impeded ingestion of nutriment. Many workmen who are exposed to most intense fumes of phosphorus are neither affected with necrosis nor with other diseases, nor does their constitution, after an exposure of years, deviate from its normal condition; the persons thus employed are, on the contrary, not rarely to be found healthy and robust looking. And still more, even if already a considerable plastic deposit has taken place, the patient may be healthy in other respects.

The pathology of "phosphorus jaw-disease" consists essentially in a hyperplastic process of the membrane investing the bone; this process is either accompanied by symptoms of inflammation, or takes place without them. The hyperplastic action is of various extent, and the morbid deposit may be transformed into osseous substance. At one time it is but slight, at other times it gives rise to a thick deposit, which, only in rare instances, is not transformed into pus, but in most cases undergoes suppuration. The disease localizes itself always in a place where the fumes of phosphorus have direct access to the membranes investing the bone; the mouth offers the best opportunity for it when it contains decayed teeth which have the cavity of the pulp exposed. The bearer of the injurious agent is the saliva, which is overloaded with the fumes, a fact which is proved by the ozone-like smell emanating from the mouth, by which workmen employed with phosphorus are easily recognized; further, the inspired air which is often luminous on expiration in the dark. It is not very probable that the fumes of phosphorus have a particular tendency to affect the mouth, but they seem to change any periosteum in general with which they come in contact. On working with phosphorus, the mouth is not only principally exposed to its fumes, but it also offers the most abundant opportunity for a direct contact, the latter being brought about especially by destruction of the substance of the tooth and the exposure of the cavity of the pulp. It is, however, not proved that the fumes of phosphorus destroy the substance of the tooth, or favor its destruction; the latter is caused by other circumstances. A complete exposure of the cavity of the pulp is not necessary for the production of local intoxication; the cavity may be protected by a layer of tooth-bone, which, however, must be permeable to the fumes. Within the cavity of the pulp the fumes find a ready soil for their work of destruction in the membrane matrices, which are to be considered a continuation of the odonto-periosteum. The hyperplastic formation in this case does not continue very long, as the direct and violent irritation thus produced causes the deposited mass to undergo rapid suppuration, and soon leads, under violent pain, to the destruction of the pulp and its membrane. At the same time the investing membrane of the root, the lining of the alveolus, and the alveolar periosteum, as far as it belongs to the alveolar process, are, after previous swelling, destroyed, leaving the bone bare, which afterward succumbs to necrosis. A formation of osteophytes does not take place at these thin parts of bone, neither is it observed on the hard palate and on the walls of the superior maxilla.

The elements of the cellular membrane, the hyperplastic development of which takes place but in a small degree, undergo no further metamorphosis, but perish in the formation of pus cells, probably because they cannot obtain sufficient material for further development, from the thin bones and the soft parts which are sparingly present and divided by interstices. It is different with the lower maxilla, which is compact, surrounded by muscles; here not only a formation of osteophytes is observed, but the bone may also become regenerated.

The disease is, moreover, developed, if the teeth from any cause are lifted out of their alveoli; the odonto-periosteum is then exposed, and is directly affected by the fumes of phosphorus; it thus becomes diseased, and afterward perishes. In the lower maxilla the morbid process appears as follows: a formation of osteophytes takes place, that is, the newly-formed mass, which is influenced by the irritation consequent upon the disease, obtains a structure similar to bone the less this transformation is accompanied by inflammatory action.

The osteophyte presents in the beginning a uniform, sometimes insular, at others continuous formation of osseous substance which envelops the bone partly in thin, slender layers, and later, partly in the shape of large masses. It is traversed by small and tortuous medullary canals, which commence at the periosteum, and are empty; the bone-corpuscles are larger, with indistinct margins, and of dark color. In the acute course of the disease, the bone itself is in normal condition, as well on its surface as in the diploë; this circumstance leads to the conclusion that the affection consists in a primary periostitis, and that the necrosis is secondary, being caused by the interruption of the process of nutrition. The disease in its acute form has accordingly a greater tendency to the destruction of the soft parts than of the bone.

The formation of osteophytes having taken place, the odonto-periosteum exhibits various conditions. If it covers masses of osteophytes which are small, or have not yet undergone suppuration, it is soft, loose, tumefied and vascular. On the contrary, if it invests large masses, it is tense, attenuated and intimately blended with the osteophyte; it appears then as a very tender membrane, which cannot be separated from the osteophyte, and is, in some places, distinctly ossified. If, finally, suppuration takes place, and the osteophyte becomes detached, the odonto-periosteum is also destroyed, and is either wholly wanting, or present only in shreds.

The osteophyte itself appears in various states; in the highest degrees of development it envelops the lower jaw in large masses, covers the processes to the basis, but is most abundantly deposited on the body of the bone. An organic connection of the new formation with the bone is not present, but it adheres only to it, and incloses it like a capsule. It has at first a lamellated character, the ossification having taken place in layers; some time later it may exhibit a fibrous structure.

Its chemical composition does not coincide with that of ordinary bone; the organic substances are present in the largest quantity. It decays in the dry state, and falls off from the bone in crumbs. The osteophyte is prone, during its development, to undergo suppuration; it is dissolved, and appears corroded; it assumes a dirty-green color, looks worm-eaten, or similar to a sponge, resembles fur, is amber-like, or formed like moss; its appearance differs according to the character of the deposited mass, and of the suppuration taking place in it. The destruction of the osteophyte generally commences at its outer surface, and progresses inward toward the jaw-bone. But if the bone becomes likewise affected by the disease at an early period, the inner layers of the osteophyte suppurate first; an empty space is thus produced between it and the bone, and the osteophyte is pierced by passages which the pus has made for its escape, so that it has often been mistaken for the capsula sequestralis. Suppuration may take these two courses on one and the same bone, as well as the osteophyte on the same bone may exhibit various characters. The bone takes part in the affection in different degrees. It remains intact for some time, when suppuration has already taken place in the osteophyte. As soon, however, as it participates in the disease, the medullary canaliculi and bone-corpuscles fill themselves, the number of the tubuli is increased, and they form numerous communications with each other. The bone becomes hyperæmic, and thereby prepared for corrosion and necrosis. The alveolar process, and the alveoli, and the thin bony walls of the superior maxilla are affected the soonest. The loss of the periosteum causes an early necrosis; moreover, they offer less resistance to the corroding influence of the pus than the compact inferior maxilla. The bone, succumbing to necrosis, becomes first discolored; it assumes a bluish-gray appearance, which is changed into a dirty blackish-green; it loses its smoothness, and appears worm-eaten; the enlargement of the medullary canaliculi increases; the bone-corpuscles lose their tubuli, and become round and smaller. The bone has been destroyed and becomes a sequestrum. As the matter furnished by the suppurating osteophytes can act freely upon the bone, which is no longer capable of reaction, the necrosed pieces of bone are detached by it, and discharged with it. (Vide *Geist, The regeneration of the lower maxilla.*)

The effect of the fumes of phosphorus consists accordingly in an alteration of the periosteum—which is either destroyed, necrosis of the bone being thus caused—or favors the formation of an osteophyte, which is disintegrated by suppuration, and partly in consequence of it, partly by impeding the nutrition of the part, gives rise to necrosis. The disease of the periosteum of the roots of the teeth, and of the jaw-bone, caused by the fumes of phosphorus, is not distinguished in the beginning, by any symptom, from an affection of the tissues produced by other causes; only the course of the disease is a different one. While the latter reaches its termination within the period of one or two weeks, be it by absorption of the deposit, be it by suppuration of the same, the disease produced by the fumes of phosphorus does not end thus quickly; absorption does not take place at all, nor is the morbid process finished with the formation of an abscess, but progresses further and further. The necrosis which, in affections from other causes takes place or spreads to any degree only by neglect of the evil, and which is of small extent in comparison with that produced by the fumes of phosphorus, progresses here irresistibly, and extends over the whole affected jaw, or even over the bones which inclose the cavity of the mouth.

In conclusion, the following remarks on the pus, and the amount of phosphorus it contains, do not seem out of place. According to Bödecker's analysis, the pus furnished in necrosis from phosphorus, present the following proportion of fat, phosphorus, and phosphoric acid :—

	Amount of Fat contained in dried Pus.	A'mt of Phosphorus contained in the Fat.	Am't of Phosphoric Acid contained in dried Pus.
1. Pus in phosphorus-necrosis of the upper jaw.	24·37 per ct.	5·35 per ct.	1·29 per ct.
2. The same twelve days later......................	13·20 “	5·67 “	0·74 “
3. Abscess of the brain in phosphorus-necrosis.	39·78 “	3·06 “	1·22 “
4. Phosphorus-necrosis of the upper jaw.......	13·39 “	4·16 “	0·55 “
5. Fistula of the neck in phosphorus-necrosis.	39·67 “	0·60 “	0.24 “
6. The same matter some time later..............	43·59 “	0·77 “	0·34 “

PROCEEDINGS OF DENTAL SOCIETIES.

PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

REPORTED BY GEO. T. BARKER, D.D.S.

A STATED meeting of the Association was held on the evening of April 2d, 1861, at eight o'clock.

President, Dr. Dillingham, in the Chair. Present, Drs. Kingsbury, Peirce, Buckingham, Fitch, Harris, Haines, Hopkins, and Barker.

The minutes of previous meetings were read and approved.

The Committee on Membership presented the names of the following gentlemen as candidates for membership: Drs. T. E. Stellwagen and G. A. Sinclair.

An election being entered into, they were unanimously elected.

The Library Committee reported that the following books had been added to the library of the Association since the last report:—

By donation, through the courtesy of the Hon. Thos. B. Florence—

Mechanical Reports of the Patent Office, 1859. 2 vols.
Agricultural Reports of the Patent Office, 1858–9. 2 vols.

By purchase—

Fox & Harris on the Teeth.
Annual of Scientific Discovery, (from the commencement,) 1850 to 1861. 12 vols.

General business being in order, a lengthy discussion ensued upon the subject of the duties of certain committees. Without taking action, the meeting adjourned.

A MONTHLY meeting of the Association was held on the evening of April 9th, 1861, at eight o'clock.

President, Dr. Dillingham, in the Chair. Present, Drs. Buckingham, Flagg, Fitch, Garretson, McQuillen, Roberts, Peirce, McGrath, Ellis, and Barker.

The subject for discussion, stated by the President to be

"AMALGAM,"

was opened by Dr. Peirce, who said, in opening this discussion he was not unmindful of the liability to misrepresentation one incurred in speaking favorably of amalgam. *First,* on the part of those who, purposely ignorant of the material so far as their own experience is concerned, are constantly attributing results to it that are due not to the amalgam, but to its improper use. *Second,* by those who, unable to perform a successful operation with gold, are eager to seize upon any remark in favor of a plastic material as an apology for their own empirical conduct. But fully indorsing a remark made some weeks since by Dr. Flagg, "that the mission of the true dentist is not merely to be able to put in a solid gold filling, regardless of consequences, but to operate in such a manner as would best subserve the interest of the patient, all things being considered," he was willing to give it such defense as it deserved. That there are teeth that can be saved for a much longer period and with greater advantage to the possessor, with amalgam than with a foil, no unprejudiced practitioner can deny; such teeth are the third molars that have been neglected until their pulps are nearly exposed, or would be quite, if all the disintegrated dentine was removed; these can be filled and preserved for years with a material such as amalgam offers, while to destroy the pulp and fill with gold from the necessarily frequent imperfect manner in which the operation is performed, the tooth in a few months at most must be sacrificed in consequence of severe periostitis; nor are wisdom teeth the only ones in which it can at times be advantageously used—both the first and second molars may be in a condition where it would be successful. In the anterior teeth, under no circumstances would he use it, believing that the preservation of their beauty is as essential as subserving the purpose of nutrition. The objections which have been urged from time to time by the most radical opponents of amalgam are, that it produces periostitis, alveolar abscess, exostosis, necrosis, and that it might occasion ptyalism.

The last and doubtful result is the only one that we do not frequently find where teeth are filled exclusively with gold, and it is of so rare an occurrence, that he believed the profession had never heard of but *one* practitioner who *thought* that that result was produced by amalgam. With the cause and treatment of the other difficulties complained of, we are all familiar, and that they should be more frequent proportionately or attended with a higher degree of inflammation than good gold fillings, is not surprising, inasmuch as the amalgam is used to such an extent by incompetent practitioners.

He would ask, who has not relieved periodontitis where there was an approximal filling, by the proper application of a file to the ragged and protruding edges, whether it be gold, tin, or amalgam? Who has not, time and again, removed both gold and amalgam fillings, and successfully treated fangs for alveolar abscess? Who has not extracted exostosed and necrosed teeth, filled as well with gold as amalgam?

The fault is not in the material but in the manipulation, and with the same care in performing the operation, the evil results mentioned are as little likely to follow with the one as the other. But amalgam has faults, and grievous ones; in the largest proportion of teeth that are filled with it, their good appearance is completely sacrificed, and for that reason he would never, as remarked before, place it in an anterior tooth, nor considered it in any respect adapted to a small cavity, either gold or tin-foil being much superior in such cases. And now that he had said this much in defense of amalgam, he would state that the cavities in which he should deem it advisable to use it are proportionately very few, but that must be left with the judgment of the operator, and that judgment must be based upon a proper appreciation of his professional duties, a thorough knowledge of the tooth upon which he is to operate, and the relation it bears to the animal economy.

Of the materials which have from time to time been used in making the amalgam, none, he thought, have any advantages over the silver and tin, or what is known as Townsend's Amalgam. If it were desirable to insert a temporary filling having more durability than gutta-percha or Hill's stopping, an excess of tin used in the preparation of the filling would make it more easily removed.

Dr. Buckingham said, he had been using amalgam sparingly for a number of years, and thought a dentist, to do justice to his patients, should use it in certain cases. He knew that some writers said that any tooth that was worth filling could be filled with gold, but believed he had made teeth useful for a number of years that could not have been filled with anything but some plastic material, either amalgam or other substance similar to it.

He had never seen a case of salivation from its use, and had doubts about its ever having produced ptyalism. If he understood the action of mercury on the system when it was used either externally or internally, the effects were the same, viz., an increased action of the secreting organs, particularly of the salivary glands; the next effect in the mouth was the swelling of the gums, the teeth becoming loose, and sloughing and necrosis of the parts the final result. These were influences produced through the general system, but he did not think amalgam fillings would produce these effects.

As for the permanency of amalgam fillings, he had seen several that had been in for fifteen years, which appeared good; in other cases he had known them to give out in a very short time; but he was not surprised at this when he considered the class of teeth it was generally used in.

The amalgam composed of silver, tin, and as little mercury as could be used, was the kind he preferred. He melted pure silver and as pure tin as he could get together, in the proportion of four of silver to five of tin, and kept it in the ingot form and filed it as he wanted it for use. When kept in this way, he thought it did not oxidize as much as it did when it was kept filed.

Dr. McQuillen remarked that no material employed for filling teeth has been a more prolific cause of controversy among dental practitioners than the subject under consideration this evening. In former days controversialists of an hour on both sides, gained for themselves an unenviable reputation, by the manner in which they opposed or defended the use of this agent. In the heat of controversy personalities which no man of sense would employ or respond to, and which, when used, are ever the surest test by which to judge not only of the breeding of scribblers, but also the shallow pretensions of the charlatans of science, were used in the most liberal manner.

Introduced into the American Association of Surgeon Dentists, the controversy was carried on with so much spirit and animosity, that a majority of the members forced a resolution upon that body, making it obligatory upon all, either to sign a pledge promising never to use the material, or else tender their resignation. Many of the members preferred the latter alternative, and the Association emerged from the struggle weakened rather than strengthened by the conflict.

The agitation of the subject (which was not confined to the professional journals, but to a great extent carried on in the daily press) attracted the attention of the community and aroused a strong feeling of prejudice against its use on the part of patients.

In this prejudice Dr. McQuillen had shared, and believed that he never should be able to entirely free himself from it. And when the late Dr. Townsend advocated in this Association, about six years back, the use of amalgam prepared with greater care and in a different manner from former preparations, influenced by this feeling, and to a great extent by the opinions and positive assertion of those in whose judgment and veracity he then had every confidence, he opposed the use of this agent. Since that period, candor compelled the acknowledgment that his views had changed, and he does not now regard amalgam as the unquestioned cause of all the difficulties that have been ascribed to it; for in an experience of fourteen years he could not recall a single instance of necrosis of the jaws, ptyalism, etc., of which others assert that they have seen so many. Recognizing the fact that idiosyncrasies sometimes exist in which the employment of the smallest quantity of certain medicinal agents is followed by the most untoward results, he would not pretend, however, to offer his negative evidence as positive proof that such things never have occurred, but his own experience had made him look upon those who assert that they have seen so many cases, with considerable doubt as to the value of their judgment or opinions, as reliable diagnosticians.

Asserting that there are teeth which it would be impossible to fill with gold foil, and yet too valuable to sacrifice, he stated that under such circumstances, and such alone, would he feel justified in using this agent; for, notwithstanding the fact that he believed that it had been much belied, he could not, as already stated, entirely free himself from such prejudice so as to use it indiscriminately. Again, it not only required more skill but also afforded one more satisfaction to introduce a good gold filling, and such practice was by far better calculated to enable one to establish a high reputation as an operator.

As evidence of the value and durability of amalgam fillings, he had seen many teeth which had been filled for more than twenty years, as good as the day the operations were performed. An opportunity had been afforded him that afternoon of examining a number of amalgam fillings introduced by Dr. Flagg, to prove that one of the great objections urged against them (discoloration of the teeth) can be obviated. In all of these cases, which had been in from eighteen months to two years, there was not the slightest appearance of discoloration, and there was no doubt that the teeth were as fully indemnified against decay as if they had been filled with gold foil.

Dr. Fitch was well aware that he was stepping upon controverted ground. Many eminent dentists had used and still use amalgam occasionally for filling certain classes of teeth in particular stages of decomposition, and others of equal celebrity had wholly condemned its use. He thought it quite possible, at least with some, that early prejudices may have had not a little influence in producing their wholesale verdict of condemnation. In some respects should have to plead guilty to this charge, as prejudices, early imbibed, had led him to look with considerable suspicion upon amalgam as being, in any sense, a proper material for filling all classes of teeth; and did his observations extend no further than to those sad and deplorable results witnessed in some mouths, where its use had been general and indiscriminate, presenting teeth in all stages of decomposition and of all shades and hues of color, from inky blackness to that but little removed from their natural complexion, he too, most assuredly, would condemn its use and consign it to a region far removed from dental practice; but when remembering to have seen teeth claimed to have been filled fifteen or twenty years, in a good state of *preservation*, but somewhat discolored, and after having used it for plugging certain classes of teeth, with variable success, for the last sixteen years, he was disposed to give it its appropriate place in the list of materials to be used in special cases, after a definite formula of manipulation, even at the risk of incurring the charge of encouraging empiricism and cheap dentistry. Regards the arguments which are often urged, as to its cheapness, and the great facility with which it may be manipulated, as demanding not even a passing notice, really amounting to nothing if these be its only claims upon our attention as a material for the preservation of teeth. The consideration of a very few points will exhaust the entire question. Its susceptibility of being made adherent, or its nice adaptiveness to the walls of the tooth; its coloring effects; its toxical nature; and its expansion or contraction in crystallization. If it be found faulty in either of the above particulars, it must militate very much against its use. He believed, with careful manipulation, that it could be so adapted to the sides and angles of the cavity as to *exclude* all foreign destructive agencies, unless this adjustment be interfered with by its contraction while setting.

One of the main arguments urged by the opposers to its use is, that it imparts to the tooth its coloring properties, disfiguring and destroying the beauty of their texture. This, indeed, is a very serious objection, and is sufficient of itself to condemn it, if the argument be founded on truth and justice; but may not this result be due more to the impurity of the materials, or to the presence of their oxides, or the manner of their combination, rather than to any action directly upon the materials themselves?

That teeth are, and have been shamefully discolored by it, is a fact, and from this its use has been abandoned by some, and by others, whenever employed, restricted to molar teeth and those very far gone in decomposition.

He thought much of the discoloration arose from the impurity or degeneracy of the materials, as he found no free or combined acids in the secretions of the mouth that would act to any extent upon pure mercury or silver. These articles, especially the mercury of commerce, is found quite impure, and the silver usually very much oxidized at the time of using, consequently entertained the idea that the coloration was very much due to these circumstances. While the secretions of the mouth do not act readily upon pure mercury or silver separate or combined, the action must be very considerable upon their oxides, and was of the opinion that could something be employed to remove these oxides at the time and after mixing the materials, the coloring properties of the mixture would be mostly if not entirely removed. He was satisfied that alcohol would not entirely do this, yet it removes much that is impure. Nitric acid is the only acid that acts to any extent, either upon pure mercury or silver, at a temperature at all permissible with the safety of the *oral* structure, and not being found in the secretions of the mouth, therefore coloration is not due to acid reaction. Strong acetic acid used with articles of food, by its constant repetition may slightly tarnish their surfaces, but nothing further. Coloration may be due to galvanic action induced by the saline secretions of the mouth, in the oxidation of one of the baser metals, or to the presence of sulphocyanuret of potassium in the salivary secretions.

In regard to its toxical or injurious effects upon the system, was inclined to question if not wholly doubt any such influence, and concurred in the views advanced by Dr. McQuillen, that he had yet to see the first case of alveolar abscess, ptyalism, etc., due to the presence of mercury in the amalgam. It is well known that mercury uncombined is inert, and equally so must it be when combined with silver or tin. The proto-chloride of mercury (calomel) and deuto-chloride of mercury (corrosive sublimate) are formed from the sulphate of mercury and muriate of soda, triturated and sublimated. As this process cannot very well be carried on in the mouth, it is hardly supposable that they are elaborated to any extent.

He thought that mercury and the crystals of silver expanded a trifle in setting, and had witnessed a few instances where the tooth, being thin, had checked after its use; yet could not speak with any certainty in reference to it. It was thought by some to contract; be this as it may, if either result followed to any extent, it should not be used.

But seldom used amalgam, and then never in any but molar teeth that were very much decayed. He considered equal care as necessary, in preparing the cavity and introducing the filling, as where gold or other materials were made use of, but much preferred gold for these particular cases, even where there is danger of breaking the tooth. Recently had seen some very fine amalgam fillings introduced by Dr. J. F. Flagg, where the teeth, after having been filled eighteen months, were in a state of perfect preservation and entirely free from coloration. This was due, as was claimed, to some peculiar manipulation or washing of the material, instituted by the doctor, and which he doubted not that gentleman would explain. Was shown others of five years' standing, performed by Dr. Flagg without having subjected the material to this peculiar process of cleansing, where the teeth were preserved but somewhat discolored.

Dr. J. M. McGrath said, unlike the gentlemen who had preceded him, his mind had never been imbued with any prejudices against the use of amalgam for filling teeth. From the day he first entered the profession up to the present, he had never hesitated to use it whenever he thought it *necessary*, and as yet had never seen any bad effects resulting, such as have been ascribed to its use by many practitioners. He would also claim the privilege of adding the same testimony for his father, (Dr. R. McGrath,) who had been in the habit of using it occasionally for the last ten or fifteen years. He did not wish to be understood as asserting that amalgam fillings have not failed to arrest the progress of decay in teeth, and that no matter with how much care the filling may have been prepared and inserted, such teeth have not continued to decay, and in the due course of time the fillings have not fallen out; such instances, he knew, occasionally occurred, but did not believe these facts are any arguments against its use, for we find the same thing happening to gold fillings. An imperfect gold filling will no more arrest decay due to local causes than a badly prepared amalgam filling; and in those cases where the decay is due to constitutional causes, unless the patient receives constitutional treatment, the finest gold filling ever inserted will be of no permanent avail. As regards the discoloration, he rejected the theory of the formation of the chlorides within the mouth or in the preparation of the filling.

He then stated an instance, where, about two years ago, he introduced an amalgam filling consisting only of *pure* silver and mercury, and happening to see it to-day he found it as perfect as when it was first inserted, not even having discolored during the two years it had been in the mouth, in the slightest degree, but retaining its original hue—of frosted silver.

Dr. Flagg said that he had shared strongly in the prevailing prejudice in regard to amalgam which existed in the profession during the early years of his practice of dentistry, and recalled vividly his feeling of mingled sorrow and astonishment when almost immediately after his return from California, some six years since, his father mentioned to him that he wished to call his attention to a plug of Townsend's amalgam, which had been recently inserted. From that time to the present, he had been experimenting as to the availability of the material and as to the validity of the objections which had been urged against it. Had for some years noticed that, as a general rule, fillings upon *approximal* surfaces failed in a comparatively short time, while fillings properly introduced into cavities properly prepared upon the *articulating* surfaces remained perfect, (with the exception of discoloration,) and saved the teeth. Was compelled to oppose entirely the statements which had been made regarding constitutionally injurious effects from the use of amalgam. Had seen many cases of irritated gums looking terribly enough to afford ample opportunity for learned dissertations from operators to patients upon the effects of mercury upon the gums. But would say that *he had never met* with such a condition which was not dependent either upon mechanical irritation, and which would have resulted just as soon from an equally bad gold plug, or from constitutional causes entirely foreign to the abused amalgam, and which yielded to proper constitutional and local treatment.

Would be explicit in the opinion that it was barely possible that an idiosyncrasy could exist in which amalgam, *per se*, might be injurious, but wished distinctly to state that, during a period of six years, had seen amalgam plugs in many hundred mouths, and had yet to meet with the first deleterious indications resulting therefrom. Had again and again treated teeth suffering from periostitis, abscess, etc., attributed to amalgam, and *refilled them with amalgam for the sole purpose of proving to patients that the material used had nothing to do with the trouble existing.* Had for some time regarded the discoloring of teeth and the failure to preserve teeth in plugging certain cavities the only valid objections to amalgam. The latter he had not as yet been able to overcome; but the former, through the instrumentality of his friend, Dr. J. E. Garretson, he had been able in a great measure to do away with. About two years since, Dr. Garretson had mentioned to him, as a result of the admixture of chloride of zinc with the mercury and filings, and then washing with water, that the plug retained a purity of color and beauty which was at once surprising and gratifying. Dr. G. requested him to experiment in this direction. He (Dr. F.) had obtained equally satisfactory results, but finding the difficulty of manipulating so as to leave the fingers, instruments, etc. free from the chloride of zinc, he had tested Labarraque's solution (Liq. sodæ chlo.) with the same results. This fluid being objectionable on account of its odor, he had tried chloride of sodium (common salt) and still with equal effect. This being agreeable, cleanly, and thus far free from any objection, he continued using it as he had been doing for eighteen months. He had, but a few hours previous, presented quite a number of plugs of from one to eighteen months duration, for the inspection of several of his professional friends, to prove that thus far they alike remained as bright as when first introduced, and *preserved the teeth in which they were inserted without the slightest particle of discoloration.* He described the method of preparation to be as follows: Into a small-sized wedgewood mortar he placed a quantity of mercury about equal in size to the cavity he was about to fill, then added three or four times that bulk of the ordinary Townsend's filings, and next, about twice the bulk of both mercury and filings, of chloride of sodium. These he rubbed well together until he obtained a dark, gray powder; to this he added a few drops of water, and then, upon further rubbing, obtained a very dark, almost black, paste; this he washed freely by pouring water upon it and mulling once or twice until the amalgam, which was now formed, presented a beautifully clean appearance; he then squeezed the mass in buckskin with plyers, rather more forcibly than was usual in preparing ordinary amalgam. This made the material too hard to work, but by holding it in the hand a few seconds, it was gradually softened sufficiently to introduce, after being properly and thoroughly manipulated, into the cavity; he allowed it to remain comparatively unfinished about fifteen minutes (sometimes more) until it was somewhat hard, and then smoothed it carefully with a burnisher; finally, arming a pair of thumb forceps with a piece of spunk, such as is used for drying cavities, he rubbed the plug evenly toward the edge of the cavity; this left an *unburnished* surface, which was allowed to remain. In this condition the plug hardened, assuming the appearance of "frosted silver," maintaining its integrity, *and upon the articulating faces of molar teeth doing better service than anything except the very best gold plugs, and equaling even these, as far as six years proving could testify.*

He does not use amalgam, *from choice,* in any teeth except molars, as thus far he has been unable to insure against discoloration in the bicuspids and anterior teeth. Remarked that the discoloration of amalgam was superficial, and that it was oftentimes possible to restore the beauty of a tooth by simply removing the amalgam plug and excavating the darkened portion of dentine which had been in contiguity with it. He used the amalgam sometimes in lower bicuspids which were much decayed, and which it was desirable to retain for the purpose of occlusion with upper natural or artificial teeth to aid in mastication. These sometimes became discolored and sometimes retained their color, but as yet his observations had not disclosed the reason for this.

In conclusion, he stated that in comparing amalgam with gold for filling *such cavities as he had indicated*, especially when they were of large size, he thought the argument was decidedly in favor of amalgam; for while it saved teeth as permanently as the very best gold plugs, it was introduced with much less of disagreeable manipulation, less irritation, less consumption of time, less expense, and was so nearly the color of the tooth as to be scarcely noticeable. If these were not arguments in its favor to the minds of some, his own opinion was based upon them, and years of experience had, as yet, only served to strengthen it.

Dr. Fitch had recently subjected amalgam washed with alcohol to a microscopic test, and found the crystalline structure exceedingly close and compact. He expected to find the minute particles of silver coated with free mercury, but was disappointed. The crystals were very fine and the structure was apparently homogeneous.

Considered that the manipulation, suggested by Dr. Flagg, in the use of chloride of sodium, simply removed the oxides present or rendered them soluble and left the metals pure; for if chlorine was in this process liberated, we should have more or less of the chlorides of the different metals entering into the amalgam. But there is no chlorine set free. It cannot be due to any bleaching process, for we should have more or less coloration produced in the formation of the chlorides. The only way to test this matter would be to subject this highly colored saline solution, derived from the trituration and washing of the amalgam with chloride of sodium and water, to a strict chemical analysis, and this would show apparently the residuum, if not the process, of its removal from the amalgam.

Dr. McQuillen suggested that the discoloration of amalgam fillings was due to the formation of *sulphurets* rather than *oxides* of silver. In illustration of this, referred to the tarnishing of silver exposed to the atmosphere, which chemists account for by attributing it to the affinity existing between the sulphur in the atmosphere and the silver; and, again, to the blacking of silver spoons when used in eating eggs, which, like all albuminous food, contain a large proportion of sulphur. As this discoloration was due to the affinities existing between elementary substances, he could not see how washing the amalgam in any way could destroy that affinity. It was, without doubt, advisable that the material should be as free from discoloration as possible before introducing it into the tooth, and according to the plan described this evening, it can be made to resemble frosted silver. He had reason to believe, however, that the absence of discoloration in fillings that have been in some time, was more apparent than real. The surface exposed may be kept bright by the friction it is subjected to in mastication, but that which is in contact with the parietes of the cavity would, if exposed, be found to present a blackened appearance. This may be so slight that it would not affect the appearance of a tooth where the walls were thick, but if they were thin, it would be quite evident. He did not wish to be understood, in offering these views, as objecting to the method advocated, for he believed it to be a good one, and worthy of a fair trial.

Dr. Garretson was not prepared to discard the chloride of zinc as a material for cleansing the amalgam, even with the objections mentioned by Dr. Flagg; on the other hand, preferred it to the chloride of sodium, and would ask members to give both a fair trial.

He uses a drop or two of the chloride in the amalgam and then washes the mixture, and the result will be a beautiful silver-colored material. In using amalgam, is guided by his judgment alone, and not by any fear of what the profession will say.

The subject of

"EXAMINATION, PREPARATION, AND FILLING OF APPROXIMAL CAVITIES"

was chosen for next discussion.

NEW ORLEANS DENTAL COLLEGE.

THE New Orleans Dental College, organized under its charter, dated March 1, 1861, will be opened for the reception of students on Monday, the 4th of November next. Preliminary Course from the 4th to the 25th, when the Regular Course will commence. The following gentlemen have been duly elected as its Faculty:—

John S. Clarke, D.D.S., Professor of Theory and Practice; James S. Knapp, D.D.S., Professor of Operative Dental Surgery; George J. Friedrichs, D.D.S., Professor of Mechanical Dentistry; N. B. Benedict, M.D., Professor of Anatomy and Physiology; Sanford S. Riddell, M.D., Professor of Chemistry and Metallurgy; N. B. Benedict, Professor of Materia Medica and Special Therapeutics; A. F. McLain, D.D.S., M.D., Demonstrator of Operative Dentistry; W. S. Chandler, D.D.S., Demonstrator of Mechanical Dentistry.

All communications must be addressed to

JOHN S. CLARK, *Dean*,
No. 140 Canal Street.

By order of the Faculty.

KENTUCKY STATE DENTAL ASSOCIATION.

BY W. MUIR ROGERS.

The Kentucky State Dental Association, pursuant to adjournment, convened in the City of Louisville on Thursday, the 9th of April, 1861.

The meetings were held in the Masonic Temple.

After prayer, the Association was declared open for the transaction of business, by the President, Dr. W. D. Stone, of Lexington, Kentucky.

The following members were present during the sitting of the Association:—

W. D. Stone, Stoddard Driggs, and A. S. Talbert, of Lexington; W. Muir Rogers, Shelbyville; R. Peckover, Paris; J. W. Grant, Lancaster; J. A. McClelland, W. G. Redman, T. G. Loockerman, E. L. Green, A. L. Dwyer, Samuel Griffith, Edward Griffith, C. C. Dunn, B. A. Pierson, Geo. B. Fitts, and R. H. Wilson, Louisville; J. W. Baxter, Warsaw; H. Baldwin, Elizabethtown; H. T. Saunders, Lebanon; Geo. S. Jones, Russellville, and James L. Nourse, Cloverport.

The officers elected for the ensuing year were:—

W. D. Stone.—*President.*

R. Peckover.—*Vice-President.*

A. L. Dwyer.—*Secretary.*

J. C. McClelland.—*Treasurer.*

Drs. Talbert, McClelland, and Rogers read essays, prepared according to appointment by the President.

W. G. Redman, B. A. Pierson, Stoddard Driggs, H. Baldwin, and W. D. Stone were appointed delegates to the National Association to meet in Cleveland.

The meeting was harmonious, and the members evidenced great interest in the discussions.

The Association adjourned on Thursday evening, to meet in Louisville, at the Galt House, on the second Tuesday in April, 1862.

Louisville, as you will see, was represented by most of her prominent dentists. It is a very desirable thing that the profession in our greatest commercial mart should stand as a unit for the elevation of dentistry in Kentucky. The influence of our city practitioners is potent, either for good or evil, throughout the whole State. The indications for good are promising.

We are sanguine that our association is a success. We have saccharine element enough to pass fermentation without souring; when the good wine will grow the better by age.

Shelbyville, Ky., April 19th, 1861.

EDITORIAL.

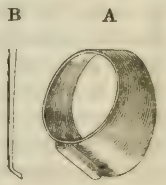
DENTAL COLLEGES.

It will be seen, by referring to another part of the journal, that we are to have another dental college in the States—the "New Orleans Dental College," to go into operation at New Orleans the fourth of November next. Most of the faculty are well known to us by reputation, but we claim a personal acquaintance with the Dean, Dr. Clark. There is no operator in our profession who combines more of the qualities of head and heart to direct a new undertaking; there is no one who aims higher than he to serve his patients and elevate his profession, and we are very happy to see that he has been placed in a position where his eminent talent can be directed alike useful to his immediate community and the profession at large. There have been objections made to dental colleges on this as well as on the other side of the water, and we feared at one time ourselves that they might not meet the best wants of the dental student; but we gained confidence every year as we saw more and more of their good effects. The objections raised against them have not been felt in this country; but, on the contrary, the most sanguine expectations of their strongest advocates have been fully realized. We do not mean in the money sense, to those who conduct dental colleges, but we know that better dentists are made in a shorter time and less sacrifice to the community than the old way of telling and showing a young man how to operate and then let him learn the rest by the mischief he does to his first patients. Besides, there is another and very important moral principle being established, and that is, it places operators on an equality with each other, as in medicine, and causes them to fraternize and respect each other, entertain and support their common interest; it breaks down the old fogy exclusiveism; it is the only way that an eminent operator's favorite and matured methods of practice can be incorporated into the young members of the profession and perpetuated for permanent good. The classes of the dental colleges in existence increase in numbers every year, which shows that more gentlemen, desiring to enter our ranks, seek that method of initiation. Indeed, few intelligent patients employ a young dentist who has not a diploma from a college, and it should be so. There is no better place to locate a college than New Orleans. By referring to the list of graduates of the Pennsylvania College of Dental Surgery, it will be seen that there is but one from south of North Carolina. The South requires a vast number of resident dentists, and this want will increase annually, and convenience for proper education is very desirable, and as it is not the rich who seek our dental colleges for purposes of education only, economy in the acquisition of knowledge in our profession is a very important matter. Besides, there are at present gentlemen in the South as competent to teach as any in the world, which was not the case, perhaps, in the early history of dental colleges. We congratulate the profession of the South on this new undertaking, and wish them, with all our heart, God speed. J. D. W.

A RETAINING INSTRUMENT.

In the introduction of gold fillings considerable difficulty is frequently experienced in consolidating, and maintaining the first piece of gold in position until the next one is brought alongside of it. To overcome this dilemma, different means have been resorted to. "Securing points," (so called,) have been drilled in the cavity of decay, where the gold on being forced in can be readily retained; when this was impracticable or uncalled for, the first piece of gold has been kept in position by an instrument held in the left hand of the operator, while the right was engaged in introducing and consolidating additional pieces. The necessity of supporting the chin or drawing back the mouth with the left hand, however, frequently compels the operator to call upon the patient or an assistant to hold the instrument. To these plans there are objections, which must be apparent to all. The hand of the patient, for instance, is generally found rather in the way than otherwise, while the presence of the most expert assistant is objectionable to the majority of patients.

To meet these contingencies to a certain extent, we present to the consideration of the reader an instrument, of which the accompanying diagram is an illustration. Fig. A is a silver shield, (to be worn on the index finger,) with a socket on the under surface in which the steel instrument B fits. A number of the latter bent at different angles, adapted to any case, should be on hand. These and the shield can be easily made by the dentist. The manner in which the fixture should be used will readily suggest itself to the mind of every reader. It will no doubt prove somewhat difficult to manage at first, but after being used a few times, we have reason to believe others will find it as we have, a useful instrument, enabling the operator, when working on the lower jaw, to retain the gold in position, and at the same time leaving the hand free to support the chin by the palm, and to draw the mouth back with the finger next the index one. J. H. M'Q.



Erratum.—In the April number of the Magazine the Jefferson Medical College should have been reported as graduating, during the last session, 187 physicians in place of 160.

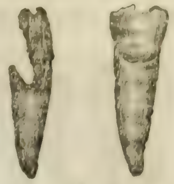
REVIEW OF DENTAL LITERATURE AND ART.

BY J. H. M'QUILLEN, D.D.S.

DENTAL REVIEW, LONDON.—JANUARY.

"ON CALCIFICATION OF THE DENTAL PULP. A Paper read at the Monthly Meeting held at the College of Dentists, December 4, 1860. By R. T. HULME, M.R.C.S., F.L.S.—The subject of calcification of the dental pulp, although it has been noticed by several writers, appears to be deserving of still further attention, and to be of more practical importance than it has hitherto been considered. Unlike the other parts of the osseous system, the teeth possess no direct means of resisting or repairing the ravages of disease. It would, however, be contrary to what is met with in every other part of the body, if Nature left these organs without some power of protecting themselves against the injuries and the pathological changes to which they are liable. A soft and more or less fluid condition of the tissues is necessary for carrying on the process of absorption, and for the reproduction of parts which have been lost, either by accident or disease. In most of the organs this is the condition in which they are naturally found; or if, like the bones, they present themselves in a more solid form, then they are surrounded by soft structures, and are freely permeated by a system of capillary blood-vessels, so that they are still capable of undergoing similar changes to those which take place in other parts of the body. The teeth, on the contrary, are only invested by soft structures around their roots, while all that portion which is known as the crown of the tooth is left exposed to the influence of the atmosphere and of the fluids of the mouth. It is true that even on the crown it is possible to demonstrate the presence of a closely-adherent membrane, termed 'Nasmyth's persistent membrane;' but this is not of such a nature as to alter the condition of the tooth in a physiological point of view, and if, in the first instance, it serves as a means of protection, it does not, after the invasion of disease, bestow upon the organ any power of reparation, or of reproducing those portions which have been injured or destroyed.

"The commonest, and, at the same time, the most fatal disease to which the crown of the tooth is liable, is that which we are all familiar with under the title of caries. Whatever opinions may be entertained as to the nature of this disease, there can be no question that it commences on the external surface of the tooth, and that it gradually makes its way toward the pulp cavity. The crown is also occasionally subject to a peculiar process of destruction, which Hunter designated by the term denudation, and which also commences on the exterior. The working surfaces of the teeth in old persons are often worn away to a considerable extent by mastication. Where the back teeth have been lost, and the person has been compelled, in consequence, to eat entirely with the front teeth, those of the upper jaw become worn away by the action of the lower teeth, sometimes the whole surface being abraded almost level with the gum; while, in other instances, all that is left of the crown consists of the layer of enamel on its labial surface, supported by a thin plate of dentine on the lingual surface. In these cases the original pulp cavity and the surrounding dentine become either entirely or partially removed. Such a case is shown in *Fig.* 1, which represents a front and side view of an upper central incisor that has been thus acted upon by the teeth in the opposite jaw, and where the pulp cavity and the dentine have become obliterated nearly to the neck of the tooth. More rarely a similar condition is brought about in some of the lower teeth.



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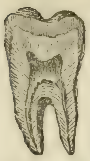
"Again, where artificial teeth have been improperly fastened, by means of hard wires or bands, the constant result is the destruction of a considerable portion of the tooth's surface. In some cases the wire will be found to have penetrated fully one-third of the thickness of the dentine on the side of the tooth with which it was in contact. In the case of bands, the injury extends over a greater extent of surface, but seldom enters so deeply into the substance of the tooth.

"In all these cases the injury occurs on the exterior of the tooth, which, as has been stated, possesses no power of restoration, and hence the part which is once destroyed is never reproduced. Experience, however, teaches us that the effects of these morbid processes and of these injuries differ greatly in different persons. Thus, for instance, in some cases caries runs an exceedingly rapid course; it has scarcely commenced before pain arises, and soon necessitates the extraction of the tooth: in other cases, on the contrary, its course is just as slow, and it may go on until the entire crown of the tooth is destroyed, without ever giving rise to pain of any importance. How, then, is this difference to be accounted for? In order to answer this question, it is necessary to consider what takes place in the interior of the tooth, and to ascertain whether any changes are superinduced in the pulp or in the dentine; and if so, what is the nature of the alterations which these parts undergo.

"Much as physiologists differ with regard to the precise method of dentification, yet all are agreed that it takes place through the agency of the pulp, and that, commencing on the apex and external surface of the formative organ, it then proceeds inward until the tooth acquires its prescribed form and size, and the dentine has attained its normal thickness. When this is accomplished, the formation of the tooth is completed, and the same arrest of growth takes place as occurs in every other part of the body at the adult period of life. If the person enjoys good health, and the tooth remains free from injury or disease, it may continue for some years without any appreciable alteration, in either the osseous tissues which enter into its formation, or in the pulp itself. Sooner or later, however, as years go on, a change takes place in the character of the nutritive process throughout the body. The proportions which the fluids bore to the solids in early or middle life is diminished, nutrition is accomplished more slowly, and the composition of the various tissues undergoes a marked alteration. There is a general induration of the parts, and a tendency to the deposition of ossific matter: ligament is converted into cartilage, cartilage into bone, the coats of the blood-vessels are often impregnated with calcareous matter, and the cartilage of the ribs becomes ossified. If we turn our attention to the teeth, or, more correctly speaking, to their pulps, we shall find that they also are liable to a similar alteration of structure. When a section is made through an old tooth, apart from the changes which may be noticed in the color and transparency of certain portions of the original dentine, the pulp cavity will be seen to have been greatly encroached upon, and the entire mass of the tooth increased in thickness. The extent to which this filling-up of the pulp cavity can take place is shown in the accompanying drawings. *Fig.* 2 represents a section of a fully-developed molar in early life, when the tooth has attained its normal amount of growth; while *Fig.* 3 represents a similar section of a molar tooth taken from an elderly person, and in which the pulp cavity has become diminished to the extent of fully one-half of its original dimensions. This change in the cavity of the tooth can only have taken place through the agency of the pulp, which, after a period of repose, must have returned to its original function of calcification, and have added fresh layers of dentine to the inner surface of the tooth.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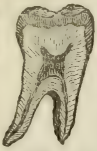
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"'The teeth,' says Wedl,* 'are distinguished at different ages by a diminution of the pulp cavity, an increase of thickness in the *cementum*, and a lessening of that of the enamel, and of the transparency of the three dental substances; by the edges and angles becoming blunted, and the surface assuming a yellow tinge, etc. These distinctions are most striking in the teeth of old men. In the *pulp* of teeth in this condition will be noticed a considerable diminution in the quantity of blood, the color of that tissue often passing into a brownish yellow, from the quantity of pigment deposited in it. Earthy salts, assuming the outward form of the botyroïdal corpuscles met with in the pineal gland, occur on the inner surface of the pulp cavity and of the dental canal, and also deposited in groups in the substance of the pulp. An increased number of layers of *cementum* will be observed, though these are often concealed by the opaque, brownish-yellowish color of the intercorpuscular substance. In thin sections, the *dentine*, sometimes throughout, sometimes only in isolated spots, appears less transparent than natural, and the dentinal tubes become less distinct, and occasionally disappear in the dark-gray or brownish-yellow substance. These partial opacities of the dentine are manifested, even to the naked eye, by a speckled appearance. The enamel presents dark, reddish-brown spots, and, as well as the dentine, appears to have lost some of its elasticity, and to have become more brittle.'"

(To be continued.)

Annual of Scientific Discovery—1861.

"New Grinding and Polishing Apparatus.—The New York Belting Company are now introducing a new form of emery wheel, which bids fair to supersede entirely the ordinary mode of covering a wheel with glue and sprinkling emery upon it. The emery is incorporated with india-rubber and sulphur, and while in a plastic state is put into moulds, and submitted, under great pressure, to a high degree of heat, according to Goodyear's patent for vulcanizing; this converts it into a solid granular mass, resembling granite or iron. It can be made of any desired grade of emery, and used either dry or with oil or water. The wheels can be turned off in a lathe, running very slow, in the same manner as iron is turned, which will enable parties using them to turn the face of the wheel to conform to work of any irregular shape, or to 'true' them, if necessary."

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* Rudiments of Pathological Histology, p. 160; Sydenham Society.

A combination of corundum and hard rubber, such as that described above, we have reason to believe would prove quite as useful and far more durable for grinding porcelain teeth, than the ordinary preparation of corundum and gum shelac, which wears away so rapidly by use that it becomes quite an item in procuring materials for the laboratory where there is much mechanical work to do. It could also be used, no doubt, for dressing down plates, as the wheels can be adapted to work of an irregular shape. The suggestion is worth trying, and we trust that those who are engaged in mechanical dentistry will test the matter.

"ON TUNGSTEN STEEL.—It is stated that cast-iron containing from five to six per cent. of tungsten acquires an extraordinary hardness. Cast-steel, also, containing from four to five per cent. of tungsten, will have a tenacity and quality superior to those of the best steels, and will become capable of taking a most extraordinary temper and hardness. According to trials made at Newstadt, tools of tempered tungsten steel were capable of cutting objects made of ordinary cast-steel equally tempered.

"Tungsten has nearly the same specific gravity as gold, and this density is recognizable in the cast-steel alloyed with it, by the alteration in the grain of the fractured surface, and by the heightened ring of the steel. In hardness, metallic tungsten nearly approaches the hardest of natural bodies, and it communicates this property to cast-steel without injuring its tenacity and malleability when the addition is of 2·5 per cent. The absolute solidity of tungsten steel exceeds that of all other known steels; for fifteen consecutive experiments with a machine in the Polytechnic Institute of Vienna showed the highest power of resistance to be 1393 hundredweight, and the lowest 1015 hundredweight, giving an average of 1158 hundredweight to the square inch; so that this steel exceeds all other kinds hitherto subjected to experiment.

"For the preparation of this steel wolfram (tungstate of iron and manganese) is purified by roasting, pulverizing, and washing, and by a final treatment with dilute hydrochloric acid. The purified ore is then placed in a crucible with coal dust, and heated to redness for three hours. The ore is reduced, and a porous gray mass is obtained, formed of metallic tungsten alloyed with carburets of iron and manganese. This is the product which is used for the preparation of tungsten steel, and it is thrown into the crucibles in which cast-steel is melted. Care must be taken before running the steel into ingots to increase the heat of the fire, for ten or twenty minutes, so as to carry the temperature of the crucible to a bright redness. It appears, however, that the manufacture of tungsten steel in quantity yet presents considerable difficulties, and that it has not yet been practicable to prepare masses or bars of considerable size which are free from faults."

"INFLUENCE OF THE PRESENCE OF TITANIUM ON THE QUALITY OF IRON.—Mr. David Mushet, the well-known English iron manufacturer, in a communication to the *London Engineer Journal*, expresses an opinion that the mystery of the excellence of the Danemora and other irons is due to the presence in the iron of a small proportion of the metal titanium. Some time ago, his attention having been drawn to this matter by the fact that crystals of titanium occur in the hearths of Norwegian blast-furnaces, he instituted a series of experiments, which he describes as follows :—

" By alloying small quantities of titanium with iron and steel I obtained surprising results, which at once convinced me that I was upon the right track at last. I now had the iron ores of the districts I have named carefully examined for titanium, and I found that all of them contained titanic acid, and that whichever ore most abounded in titanic acid, the iron and steel produced from that ore was the most celebrated and valuable. In reducing likewise the ores of iron and titanium I found that a peculiar slag, or scoria, was always obtained, and of such a remarkable character that it was impossible, when once seen, ever to mistake it for any other kind of iron slag ; and from the color and appearance of this slag I could at length, by experience, determine with tolerable accuracy the percentage of titanium, and therefore of titanic acid, in any given specimen of titanium ore or titaniferous iron ore. And now the whole mystery of the Danemora iron was at once elucidated ; and its explanation is this—the magnetic iron ore from which the Danemora iron is prepared contains a larger percentage of titanic acid than other ores from which the inferior brands of Swedish iron are obtained, and the bar iron obtained is therefore more largely alloyed with titanium.

"Moreover, as titanium is perhaps the most difficult to fuse of all the metals, its alloy with bar iron requires a higher temperature for its fusion than that required for the fusion of bar iron destitute of such an alloy, and it is well known that the best Danemora iron, in the state of iron, is more difficult to melt than any other charcoal bar iron. It has also been observed by the steel trade that steel irons which require much melting, *i.e.* which are difficult to melt, yield cast-steel possessing great body, *i.e.* powers of endurance when made into a tool.

" It will, I am aware, be objected that chemists have as yet detected no titanium in these irons. I grant this ; and I will explain why it has been so. Chemists confound the titanic and silicic acids one with the other, and besides this, the insoluble residuum is likewise a form or compound of titanium. I will cite a case in point which completely confirms and proves my position. An extraordinary magnetic iron-sand was brought to England from a volcanic district in the South Seas. Some of this ore was sent to me, and I perceived at once that it was an ore of titanium. On testing it by my processes, I found that it must contain at least eight or ten per cent. of titanic acid.

"I have from this ore manufactured steel of surpassing excellence, samples of which are in the hands of the fortunate owner of the deposit, the value of which for steel and iron making is incalculable. The analogy between this ore and that of Danemora has already been observed by parties acquainted with the manufacture of Swedish iron ; but the explanation of the similarity was reserved for me to give. Until my discoveries upon this subject, titanium has only been alluded to as a pernicious ingredient in iron ores or iron, causing redshortness, etc. One chemist alone has remarked that titanium in small quantities does not appear to affect the quality of iron injuriously ; and this remark I find in an almost obsolete French work on chemistry. The celebrated Damascus blades are made from iron reduced from a highly titaniferous iron ore. The Wootz ore of India is more titaniferous than that of Danemora. The Elba iron ore is moderately titaniferous, and so also is the Brush iron ore of the Forest of Dean. Iron alloyed with titanium possesses a degree of body and durability unknown in ordinary bar iron of good quality. First-rate steel can be only made from iron containing titanium. There is a spurious, ductile, and easily workable steel which owes its usefulness to the presence of manganese; but between which and the titanic steel there exists as wide a difference, in point of excellence, as there is between common hot-blast Scotch pig iron and the best Shropshire or Blaenavon cold-blast iron.

"This difference is well known to the Sheffield trade. Titanium steel has body. Manganese steel has little or none; but it is ductile, and hardens well, and is cheap besides, and can be applied to inferior purposes. Not that the Sheffield steel-makers ever dreamed about titanium; but what they call body is, in intelligible language, rendered correctly by the term titanium; and to the fact of this metal existing in alloy with Danemora and other Swedish bar irons to the extent of from one-quarter per cent. to about one or one and a half per cent., is mainly due the rise, progress, and present prosperity of Sheffield and its manufacturers."

"INFLUENCE OF ARSENIOUS ACID UPON THE WASTE OF THE ANIMAL TISSUE.—According to experiments made by Professor Schmidt and Dr. Stuerzwage, of Dorpat, arsenious acid, when introduced into the circulation, occasions a considerable diminution of the ordinary waste of the tissues.

"This decrease, which amounts to from twenty to forty per cent., occurs even after the administration of very small doses; more rapidly, if the acid is injected directly into the veins; more slowly, yet with equal intensity, if absorbed from the intestines. The action is most striking in the case of fowls, which neither vomit after injection of the arsenic nor reject their accustomed food; but even in cats, which are subject to vomiting after the injection, and must therefore be regarded as in a starving condition, the waste of the organism was diminished about twenty per cent., after subtracting the decrease occasioned by the mere want of food.

"This fact satisfactorily explains the fattening of horses after small doses of arsenious acid, a phenomenon well known to horse dealers.

"An amount of fat and albuminous substances equivalent to the repressed carbonic acid and urea remains in the body and increases its weight, if the animal receives at the same time a sufficient amount of food.

"When larger doses of arsenious acid are given, nervous symptoms appear, which may be classified in two groups: spinal irritation and paralysis. To the first may be referred the vomiting, the accelerated respiration, the feeble pulse; to the last, the inclination to sleep, the weakness, and the retarded and labored breathing. Both may be explained by the very considerable congestion of the central organs which was constantly observed in post-mortem examinations.

"These experiments are of particular interest, since they go far to prove the complete reliability of the published accounts of the custom of 'arsenic eating,' which is said to prevail among the peasantry of several Austrian provinces. These accounts have been time and again held up to ridicule by toxicologists, and, as a rule, have been received with suspicion by all scientific men.

"During the past year, a great amount of evidence bearing on this subject has been collected by Professor Heisch, F.R.C., and published in the *London Chemical News*, (May 19, 1860;) so that, if human testimony is worth anything, the fact of the existence of arsenic eaters must be regarded as beyond a doubt. Professor Heisch states that he has been informed by Dr. Lorenz, Imperial Professor of Natural History, formerly of Salzburg, that he knows that arsenic is commonly taken by the peasants in Syria, the Tyrol, and the Salzkammergut, principally by huntsmen and wood-cutters, to improve their wind and prevent fatigue. He gives the following particulars:—

"The arsenic is taken pure in some warm liquid, as coffee, fasting, beginning with a bit the size of a pin's head, and increasing to that of a pea. The complexion and general appearance are much improved, and the parties using it seldom look so old as they really are; but he has never heard of any case in which it was used to improve personal beauty, though he cannot say that it never is so used. The first dose is always followed by slight symptoms of poisoning, such as burning pain in the stomach and sickness, but not very severe. Once begun, it can only be left off by very gradually diminishing the daily dose, as a sudden cessation causes sickness, burning pains in the stomach, and other symptoms of poisoning, very speedily followed by death. As a rule, arsenic eaters are very long lived, and are particularly exempt from infectious diseases, fevers, etc.; but, unless they gradually give up the practice, invariably die suddenly at last. In some arsenic works near Salzburg, with which he is acquainted, he says the only men who can stand the work for any time are those who swallow daily doses of arsenic, the fumes, etc. soon killing the others.

* * * "Another fact, says Professor Heisch, mentioned to me by some friends, is well worthy of note. They say: 'In this part of the world, when a graveyard is full, it is shut up for about twelve years, when all the graves which are not private property by purchase are dug up, the bones collected in the charnel house, the ground plowed over, and burying begins again. On these occasions, the bodies of arsenic eaters are found almost unchanged, and recognizable by their friends. Many people suppose that the finding of their bodies is the origin of the story of the vampire.' * * *

"*Arsenic in England.*—Recent English journals give the following account of the existence of arsenic in a brook or stream that gives name to the village of Whitbeck, in the County of Westmoreland. This brook rises among the mountains of Cumberland, and probably derives the arsenic which has been found in its waters from veins of arsenical cobalt ore, through which its waters percolate; for a few yards above the sources of the stream is the entrance of a mine, which yields this arsenical ore in abundance. So marked is the character of the Whitbeck water, that fish are never found in it, and ducks, if confined to it, soon perish; and yet it is habitually used for every purpose by the inhabitants of Whitbeck, and with beneficial effects so apparent that one might be justified in paradoxically characterizing arsenic as a very wholesome poison. The deadly element in dilution is productive of the most salutary effects, as among the Styrian arsenic eaters; and the villagers generally live to enjoy a healthy and robust old age, their lives extending much beyond the average in surrounding towns. The traveler is struck by the handsome features and rosy cheeks of the children. In the case of some laborers sent to work upon a railroad in the vicinity, the water at first produced the usual soreness of mouth, but after this had passed away their health was extremely good. The only effect it produces on horses is visible in the remarkable sleekness of their coats."

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEO. J. ZIEGLER, M.D.

"*Lecture on the General Properties of the Nervous System.* By M. CLAUDE BERNARD, Member of the French Institute; Professor of General Physiology at the Faculty of Sciences, etc.—After having mastered the general principles which must guide the physiologist in the path which modern science has opened before him, you are at length fully prepared to enter into the subject itself, and view the question in its practical bearings.

"Our plan consists, as you are aware, in successively examining each of the systems which form a part of the economy, with reference to the various affections, of which they frequently become the seat. The immensity of our scheme excludes of course all possibility of a complete analysis: to fill up so vast an outline is beyond our power, and we do not pretend to discuss the problem in its widest sense. A similar attempt, if not presumptuous, would at least be premature. For, as we have labored to prove in the former part of this course, experimental pathology must, in every case, be grafted upon a previously-acquired knowledge of the physiological state; and, in endeavoring to elucidate the process which takes place in a diseased animal, we must never lose sight of the healthy condition. Our researches must, in consequence, be confined to a few given points, and cannot be prosecuted, with any rational hope of success, in the case of organs the physiology of which remains in doubt; in other words, the laws which control the regular manifestations of life must have been ascertained, before their morbid deviations can become a proper object of inquiry. Without attempting, therefore, to explore in its full extent the spacious field of scientific nosology, we shall rest satisfied with examining a limited number of questions, and hold ourselves fortunate if it falls to our lot to collect some few materials for the gigantic edifice, which can only be reared by the persevering efforts of successive generations.

"The following method is that which, after mature reflection, appears best calculated to answer our present purpose. We shall in future combine our lessons on experimental pathology and operative physiology in a single series of lectures; for although the scientific result in the pursuit of which we are engaged is closely connected with the higher regions of medical philosophy, we cannot think of omitting, in this course, the surgical directions which are of such vital importance to all practical observers. In intellectual pursuits, as well as in manual trades, a familiar acquaintance with the use of our tools is one of the chief elements of success; and since the chemist and natural philosopher are at all times prepared to repeat the experiments connected with their own peculiar branch of science, a considerable degree of skill in performing operations on the living subject is evidently indispensable to the physiologist.

"The properties of the spinal cord have been selected, in preference to other subjects, as an introduction to our future studies; for as the order adopted in reviewing the various functions of the economy is entirely a matter of choice, we have thought proper to assign the first place to the phenomena of nervous action, which play so prominent a part in health and disease. Without further prelude, therefore, we will now pass to this subject, laying down, as we proceed, the rules for performing the principal experiments which lead to the knowledge of the normal powers and morbid influence of the nervous system; the question will, in this manner, be viewed at once in its physiological and pathological aspect. A thorough acquaintance with all these points can alone enable the physician to trace back the successive steps by which any given morbid series progressively arrives at its complete evolution; for as long as the prime motor remains concealed, the true relation between the symptoms observed, and the causes which produce them, will, in almost every instance, escape us.

"The predominating influence of the nervous system over the remaining parts of the economy is directly proportionate, in the case of each animal, to its degree of elevation in the scale of life; so that in man and the higher mammalia the nervous element becomes in reality the primitive source of all vital phenomena (?). But this great apparatus is itself subdivided into various secondary systems; and, in this respect, one of the most important acquisitions of modern physiology is due to the labors of Bell and Magendie; we allude to the division of nerves into sensitive and motor branches. But this initial discovery, however valuable, does not fully meet the actual demands of science; for both physiology and pathology, but more especially the latter, imperatively require a further extension of our knowledge on this point.

"The question, however, has been almost exclusively viewed in this light by modern observers. When, after dividing a given pair of nerves, sensibility was found to disappear in the corresponding parts, the divided pair was set down at once as belonging to the sensitive apparatus; and it was classed on the contrary among the motor branches, if voluntary motion was suppressed in consequence of the operation. The functions of the spinal pairs having thus been determined, the experiment was repeated on the cranial nerves; and, lastly, the brain itself was subjected to a similar process of analysis, its constituent parts being successively examined, with reference to the powers of sensation and volition; in short, it was taken for granted that our acquaintance with the properties of the nervous system would be altogether complete, as soon as it became possible to distinguish, with perfect accuracy, the sensitive from the motor fibres in all parts of the body. The absolute insufficiency of such a method of investigation is too evident to require a proof; for between the normal existence of a vital function and its total disappearance, a variety of intermediate conditions arise the knowledge of which is no less interesting to the physician than to the physiologist; in fact, the entire destruction of our organs under the influence of disease never takes place at once; the process of disorganization advances by degrees, and the fatal event is the last consequence of a long and protracted series of progressive alterations. How, therefore, can we expect to imitate the effects of disease by suddenly removing an organ from the body, or destroying its properties at a single blow? The ultimate results derived from the action of morbid causes ought not, of course, to be neglected in our studies; but the gradual changes which precede the final dissolution of the injured apparatus equally deserve our attention, and must be carefully ascertained before we can flatter ourselves with having 'taken Nature in the fact.'

"The nervous system, although chiefly designed to receive the impressions of external objects, and communicate them to the understanding, exerts at the same time a powerful influence over the internal modifications which take place within the living economy. The impressions produced upon the sensitive nerves, for instance, almost invariably give rise to motions of different kinds; such is more especially the case with respect to organic life. Now, the intensity of these internal motions, which so considerably varies according to circumstances, is evidently one of the principal agents concerned in the production of diseases; and the properties of the sensorial apparatus being hitherto (in a great measure) involved in doubt, it behooves us to enter more deeply into the question than has been done by our predecessors. If, for example, we give the name of excitability to the characteristic faculty enjoyed by sensitive fibres, namely, that of perceiving distinct impressions when placed in contact with external stimuli, how shall we succeed in explaining its singular and extensive variations in the sound as well as in the diseased subject? Do not the same agents frequently determine opposite impressions in different individuals? and is not the sensation often perceived in cases where no corresponding object exists? In a former part of this course, some of the changes which occur in nervous sensibility, under given conditions, have already been noticed: we have shown you that in recent wounds, an important alteration rapidly takes place in the nervous ramifications which spread to the part, when exposed to atmospheric action, and that, in consequence, less pain is experienced at the moment when the tissues are divided, than after a short space of time has elapsed. The discordant results obtained by physiologists in making experiments upon recurrent sensibility have been accounted for in this manner; it will of course easily be conceived that nerves, which immediately after being divided appear for a moment benumbed, may rapidly acquire so intense a degree of excitability that the mere contact of foreign bodies becomes intolerably painful: and a similar explanation applies to the intense sufferings of certain patients, in affections of ligaments and tendons, fibrous membranes, and other parts usually viewed as insensible. The distinction established by Haller between those tissues which are endowed with sensibility and those which are not, has in consequence given rise to endless controversy; the results obtained by each individual observer depend, in fact, upon the particular conditions under which the experiment is performed.

"It may, however, be laid down as a fundamental axiom, that in all cases in which an exaggerated amount of sensibility is exhibited, there exists a preternatural activity of the posterior roots of the spinal nerves; for, when these are divided, all sensations are at once abolished in the corresponding regions. But, in endeavoring to appreciate the nature of these phenomena, we labor under the same difficulties as in ascertaining the source of the vascular development, which so rapidly arises in organs affected with inflammation. In such cases, it is uncertain whether new capillaries have been, as it were, created on the spot, or whether minute vessels have been suddenly enlarged so as to permit the free circulation of the blood in parts from which it was previously excluded. Now, the same question might be put to us with reference to nervous hyperæsthesia, and we should equally feel at loss for an answer. Are we to suppose an additional number of nervous filaments to have been generated under the influence of the morbid process, or the physiological activity of the posterior roots to have been unusually excited? Both positions are equally capable of being supported by plausible arguments; for, on the one hand, the extremities of nervous trunks are provided with cells, from which new elements may be created; and, on the other, the sensibility of the posterior roots is liable to the most extensive variations, even in a perfect state of health: thus persons engaged in deep meditation are for the time being almost entirely deprived of peripheral sensibility, although the organic functions of life do not experience the slightest derangement,—a fact of which historical examples stand on record; at the same time, acute impressions, whether of pain or pleasure, are known to suppress for awhile all other sensations, in strict conformity with that celebrated sentence of Hippocrates, 'Duobus doloribus simul abortis, vehementior obscurat alterum.' But, to adduce a still more physiological example, (if we may be allowed so to express ourselves,) the properties of the pneumogastric nerve afford abundant proofs of the influence exerted by certain conditions of the body over nervous action. In most animals this voluminous trunk may be excited without giving pain, after a long fast; but the slightest irritation, during the digestive process, is attended with intense sufferings, which the animal expresses by plaintive cries and convulsive movements: now, in this case, no morbid transformation has evidently taken place.

"It must, therefore, be acknowledged that sensibility is subject to deep variations, even in the physiological state; and the importance of such changes will be easily understood if we remember the facility with which local disorders become general, through the channel of the sensitive apparatus; in a vast number of cases, the impulse which sets the contractile system in motion is derived from the impressions produced on the surface of the body. We find the motor nerve excitable, in a greater or lesser degree, in various organic conditions of the economy; now, the origin of such modifications is to be sought for, not in the centre, but at the circumference of the nervous system. In the instance we have just adduced, is the brain to be viewed as the source of the unusual sensibility of the pneumogastric nerve during the process of digestion? We are fully aware, on the contrary, that the condition of the mucous coat of the stomach, to which the terminal extremities of the nerve are distributed, is the only cause of so prodigious a difference; as long as it remains pale and flaccid, the nerve remains in a state of comparative indolence; but, when the contact of food has accelerated the circulation, and caused the inner surface of the gastric cavity to grow red and tumefied, a corresponding effect is produced upon the nervous trunk, which suddenly emerges from its previous torpor. The flow of blood to its extremities would, therefore, appear to be the vital stimulus which calls its slumbering powers into full activity.

"The different degrees of excitability exhibited by various parts of the nervous system, under galvanic influence, are probably connected with similar conditions. An instance of this fact, which is, no doubt, still fresh in your recollections, is afforded by the chorda tympani, as contrasted with the motor nerve of the parotid gland. When galvanism is made to act upon these nerves, a much more powerful current is required to produce the secretion of parotidian saliva than in the case of the submaxillary gland; now, the peculiar excitability of the tympanic nerve evidently arises, not from any special disposition of its cerebral origin, but from the distribution of its terminal branches to a rich vascular tissue, which abundantly supplies the materials of secretion, and bestows additional sensibility upon the nervous element. In the same manner does the flow of blood to a part (whether occasioned by the legitimate demands of nature, or produced under the influence of disease) act upon the corresponding nerves. When a branch of the sympathetic nerve has been divided, the vessels are paralyzed, and no longer oppose an active resistance to the pressure of the blood; so that the quantity of this fluid which passes in a given space of time through the affected part is notably increased. A simultaneous augmentation of temperature and sensibility is invariably found to be the result of the operation. The effects of inflammation must be viewed in the same light. If the sensibility of a cutaneous nerve is ascertained in the healthy state, by means of a graduated apparatus, it will be found that, after scalding or blistering the parts to which its ramifications are distributed, a considerable increase of its excitability has taken place; a galvanic current, which is scarcely felt on the opposite side, provokes instant pain when applied to the nervous trunk which spreads to the injured region. The properties of a nerve are, therefore, evidently modified by the state of the organs in the substance of which it terminates: our experiments upon the injection of sand into the capillaries, and the general disturbance which arises from the operation, afford an additional proof of this.

"You perceive, gentlemen, that even in the physiological state, both sensitive and motor nerves are liable to extensive oscillations in the intensity of their action, from absolute dullness up to the most exquisite sensibility. But no precise limits can be assigned to the extent of these variations in the normal state: no visible barrier separates the field of physiology from that of pathology; there is a point in which the two opposite conditions meet, and cannot be distinguished from each other: we are thus no longer able to say, 'This is health, and this is disease.' If the irritation produced by surgical lesions exaggerates the sensibility of the injured parts, the physiological activity of the ordinary functions of life produces a similar result, although in a different manner. The genital organs, in a state of rest, are not endowed with a higher degree of sensibility than the surrounding parts: but when placed in a state of erection, the slightest touch provokes those vivid sensations which certain naturalists have viewed as the result of a special sense.

"To appreciate with scientific accuracy these interesting phenomena is a matter of great difficulty; to ascertain their existence is not sufficient for our purpose: their different degrees of intensity must also be measured, as far as possible. Now, in physiology, the facts which come under one's notice cannot be abstractedly studied: they must be viewed in connection with each other. A nerve cannot exist by itself; its properties are inseparably linked with those of the surrounding parts. You therefore perceive that vital phenomena cannot be estimated with reference to an absolute standard; all we can possibly accomplish is to compare them with each other, without endeavoring to establish a definite proportion between them; and even this limited result cannot easily be attained to. Let us suppose, for instance, that we intend to produce a sensation of pain in an animal; in order to judge whether the intended effect has been produced, we must watch its movements and listen for its cries; and if the subject of the experiment remains entirely motionless, we are quite at a loss to say whether the attempt has been successful or not. In the case of man alone can direct information be obtained from the patient: thus in operating for cataract, Magendie was enabled to ascertain the total insensibility of the retina, when acted upon by ordinary stimuli; the impression of light alone is capable of acting upon the optic nerve; and the contraction of the pupilla by reflex action bears witness to the power of this agent.

"But, as we have often stated, there exist certain animals which undergo without flinching the most painful operations: the shepherd's dog belongs to this class. What remains to be done in such cases? When the posterior spinal roots are acted upon, we find them to be endowed with sensibility in all kinds of animals; their cries and convulsive movements evince the acute pain which they feel; but were the subject to remain motionless, the existence of such a property in nerves could not possibly be demonstrated; in experiments, therefore, in which no pain is expressed by the animal, are we entitled to conclude that none is felt?

"We have frequently employed, to our full satisfaction, an ingenious method of ascertaining the fact in such cases; we allude to the cardiometer. This instrument, as you are aware, merely consists in a delicate monometer, which is adapted to some large artery (the common carotid in general) for the purpose of measuring the pressure of the blood, and the intensity of the heart's action: now the sensibility of this organ is such that latent impressions (so to speak) or sensations which no outward sign betrays are at once revealed by the sudden augmentation of its impulsive power; the well-known effects of moral emotion afford a trite instance of this. In our next lecture, you will see that a nerve, after being laid bare, may be touched so lightly as not to provoke the least agitation; but the rapid ascension of the mercury contained in the tube of this instrument immediately informs us of the impression produced upon the sensitive apparatus. On the other hand, when the posterior roots have been cut, all excitability being destroyed, the peripheral extremities of the divided nerves may be pinched, bruised, burnt, or otherwise acted upon, without altering the level of the mercurial column in the slightest degree; an implicit reliance may therefore be placed upon this valuable instrument, which frequently enlightens, but never misguides, the physiologist.

"We shall, of course, employ a variety of stimuli for the purpose of awakening the dormant powers of the nervous system; and galvanism naturally occupies among these agents a prominent place; we possess, as you are aware, a graduated apparatus, which enables us to measure with great accuracy the intensity of the currents employed in our experiments; this method of operating will be found of the highest utility in comparative analysis.

"In short, gentlemen, the following is the programme of our studies: we shall examine the chief properties of the nervous system, and perform in your presence the classical experiments with which you are already familiar; but the mere verification of facts not being the actual purpose of our researches, we shall, after duly ascertaining their existence, measure the comparative intensity of nervous actions, and review their different shades; and, lastly, we shall seize upon every opportunity which offers of turning to account our physiological knowledge in practical applications. Such, gentlemen, is the final object which, in this course, we have invariably kept in view."—(*Med. Times and Gazette.*)

Regeneration of Nerves.—In the course of one of his instructive lectures on the physiology of the cranial nerves, (*Amer. Med. Times,*) Dr. Dalton makes the following remarks on this subject: "Now there are several very important points, gentlemen, with regard to the division of nerves, to which I shall call your attention during the remainder of this lecture.

"In the first place, it is a fact now pretty well established that division of a nerve, although it paralyzes immediately the parts to which the nerve is distributed, does not paralyze those parts permanently. That is to say, a divided nerve, contrary to what was at one time supposed, may unite and recover its function, in the same manner as a divided muscle or a broken bone. Otherwise any wound which cuts off a certain number of nervous filaments would necessarily produce a permanent local paralysis of motion and sensibility to a corresponding extent. Now, we know that this is not the case; but that, in surgical operations which require deep dissection, local paralysis, as a consequence, is seldom or never permanent. Now, I have already called your attention to an instance of this regeneration of divided nerves in an animal which you saw a week ago—in which the fifth pair had been divided upon the right side three and a half months before. I told you at that time that immediately after the operation the usual effects of this division were apparent, viz., complete loss of sensibility in the integument and mucous membrane of the corresponding side of the face. This condition lasted for many weeks, but at the end of a certain period the animal began to recover the powers which she had lost. I will now show you the animal again, in order that you may see to what extent this has taken place. Immediately after the operation sensibility was completely abolished, as I have told you, on the right side of the face; so that when I touched the mucous membrane of the orifice of the nares with the point of a needle, not the least trace of sensation was manifest. But since the first of January this sensibility has been returning, and, as you see, it is now tolerably distinct. In this animal perforation of the cornea and evacuation of the eye took place, after which the ulcerated parts healed over. There is now a well-marked opacity of the cornea at the spot where perforation occurred; and at the inner end of this opacity there is adhesion of the iris to the cicatrix. At first the cornea was completely insensible, as I have already mentioned; but now you see very plainly that its sensibility is returning, as well as that of the nose and the lips. Besides this, the animal has recovered, to a great extent, the power of mastication on the right side, which was lost at first, owing to the paralysis of the muscles of the lower jaw; and if two fingers be placed on either side of the jaw while the animal is feeding, the contraction of the right masseter muscle can be distinctly felt, although it is still less powerful than on the opposite side. So in this animal, in the course of three and a half months, both sensibility and the power of motion have, to a certain extent, been regained.

"Here is another instance of a similar kind. In this animal (a cat) three and a half months ago the facial nerve was divided upon the left side; and the consequence of that division was, as usual, paralysis of the muscles moving the external ear, the orbicularis oculi, and the superficial muscles of the face generally. The animal, immediately after the operation, was unable to close the left eye or to move the left ear. Now, by irritating the posterior surface of the left ear, the movements of the organ are again very distinctly excited, though still less vigorous than on the opposite side. So it is with regard to the orbicularis oculi. On touching the cornea of the right or uninjured side you see that closure of the eyelids is complete, while upon the left side this closure is only partial, but still very much more considerable than it was immediately after the operation.

"We find, therefore, that a healthy nerve, be it sensitive or motor, if divided transversely, will unite, and its function will be re-established.

Now, it has been found by various experiments, not only that this is the case, but also that if a portion of the nerve be cut out, the exsected part will frequently be regenerated. That indeed has been the case in the last animal shown you, where the nerve was exsected for the length of about one-half inch, and has been regenerated to the same extent. Bidder, in Germany, and Valentin, in Switzerland, have also come to the same conclusion. They have found that the nerve may be regenerated, if cut out, to the extent of three-quarters of an inch to an inch.

"Various other experiments of a very curious nature have also been performed, since this first and most important truth was discovered. These experiments were instituted with a view of ascertaining whether the *filaments belonging to one nerve* could be made to *unite with those belonging to another;* and whether motor filaments could be made to unite with sensitive filaments, either of the same or different nerves. Flourens, in France, was the first who undertook this line of investigation. He experimented upon the nerves distributed to the wing of the cock. There are two branches of the brachial plexus in this animal; one branch distributed to the muscles of the upper side, the other to those of the lower side of the wing. Flourens divided both these branches, and then crossed their ends in such a way as to bring the divided extremity of the upper nerve in contact with that of the corresponding nerve on the lower side, and *vice versa.* He then closed the external wound, and allowed it to heal; and after a time found that the union of the two nerves in their new situations was complete. Immediately after the operation the muscles of the upper and under side were equally paralyzed. After a time it was found that the bird began to recover the muscular power of both regions, and finally over all the muscles of the wing. On examining the wound afterward, it was found that the nerve of the upper side had united with the nerve of the under side, and that of the under side had united in the same way with that of the upper. On exposing these nerves and irritating them, it was found that irritation above the wound, applied to the trunk of the nerve which naturally supplied the upper side of the wing, produced contraction in the muscles of the lower side; and that upon irritating the branch which naturally supplies the lower side, the muscles of the upper portion of the wing were thrown into contraction; thus showing not only that the two divided extremities of the nerve had united with each other, but that a physiological communication had also been established between them, in this unnatural direction.

"Is it true, however, that motor filaments may be made to unite with sensitive filaments? Schwann, in Germany, endeavored to settle the question in the following way: He divided the sciatic nerve of the frog in the thigh, and allowed the wound to heal. He then exposed the spinal cord at the point where the anterior and posterior roots of the sciatic nerve are given off, divided the posterior roots, and irritated them by a galvanic discharge. He wished to ascertain by this, whether any of the sensitive filaments of the nerve had united with motor fibres, and whether consequently the muscles of the leg could be made to contract by irritating the posterior or sensitive roots of the nerve. The result of the experiment, however, was negative. Schwann found that irritation of the posterior roots of the nerve did not produce any contraction in the muscles below. Therefore, either none of the sensitive filaments had united with the motor fibres of the nerve below, or else, this union having taken place, the sensitive filaments were incapable of communicating any stimulus to the motor fibres.

"A more remarkable series of experiments with regard to this same question were those undertaken by Gluge and Thiernesse, in Germany. They operated upon two of the cranial nerves, one almost exclusively sensitive, the other almost exclusively motor, viz., the lingual branch of the fifth pair, and the hypoglossal. A wound was made in the side of the neck, and the lingual and hypoglossal nerves were exposed and divided. Then the extremity of the lower part of the hypoglossal was simply united with the extremity of the upper part of the lingual, and the wound was closed. But upon examining the animal afterward, it was found that in this case all four extremities of the divided nerves had united together into a single cicatrix; so it was impossible to tell which nerve had united with which. In order to avoid this difficulty, the plan was afterward adopted of uniting together, as I have already said, the lower part of the hypoglossal and the upper part of the lingual, and then dissecting out the remaining portions of each nerve, for the full extent of the wound. The two nerves, the lingual and hypoglossal, were thus allowed to remain in contact with each other; and at the end of a certain time it was found that they had united with each other by a firm ribbon-like cord, which contained in many instances nervous filaments completely distinguishable by the microscope. Notwithstanding this union, however, a galvano-electric discharge, passed through the lingual nerve, did not produce any contraction in the muscles of the tongue below, demonstrating the fact that although sensitive and motor filaments might become united anatomically with each other, there was, nevertheless, no physiological relation between them, and no nervous stimulus could be communicated from one to the other.

"Now, in doing these experiments, various other points were established at the same time. For example, it was found, after exposing the hypoglossal nerve, that on grasping it with the forceps certain signs of pain were produced. Now, we know that this is exclusively a motor nerve at its origin, but there are certain sensitive filaments which afterward enter into its composition, and which are due to inosculation with other cranial nerves. In the same manner the facial nerve, which is itself exclusively motor, receives sensitive filaments from certain branches of the fifth pair. The converse is true with regard to the lingual branch of the fifth pair; for although sensitive at its origin, it is joined in its course by a fine bundle of motor filaments, constituting the *chorda tympani.* Thus both these nerves, although exclusively motor or exclusively sensitive at their origins, become mixed nerves before they reach their final distribution."

Neuralgia.—The following account of a severe case of this disease, successfully treated by exsection of the nerve, is copied into the *Med. and Surg. Reporter* from an interesting report by Dr. Kerr, of the Hospital of the Med. Missionary Soc. at Canton, China: "A man aged twenty-seven years, from the district of Haiping, was admitted September 6th. He had suffered with neuralgia in the lower jaw about three years. During the last twelve months the pain had increased in intensity. It came on in paroxysms, with intervals of from five to ten minutes, which sometimes were extended to half an hour. During the paroxysms, one hand grasped the forehead, and with the other he rubbed the side of the face, and his groans manifested the greatest agony. Day and night were alike to him, and sleep only came in the short intervals of his suffering. The intensity of the pain had worn down his health and strength. His face was thin and sallow, and his countenance wore an expression of anxiety and distress. He was unfitted for any business, and life was a burden. The treatment usual in such cases was tried for several weeks without benefit. A tooth, slightly decayed, was also extracted, but the pain continued as before. To relieve such intense suffering, extreme measures were considered justifiable, and the following operation was performed: After giving chloroform, an incision was made through the skin and muscles of the cheek, laying bare the jaw-bone near the angle. With a small trephine, a circle and a half of the external plate of the bone were removed, exposing the cellular portion in which was the canal containing the artery and nerve. The bone-chisel was then used for the purpose of severing the nerve. The artery was necessarily diseased, and the hæmorrhage was stopped with the actual cautery. Soon after the patient had recovered from the influence of the chloroform, and was placed on his bed, the pain returned, and it was supposed that the operation would fail to give the expected relief. But in a few days the pain began to diminish, and at the end of a week it entirely disappeared. The general health now began to improve, and the patient gradually gained flesh, strength, and spirits. He left the hospital November 14th, and up to that time continued to be perfectly free from the pain."

Turpentine an Anæsthetic.—In a communication to the *Lancet*, MR. JOHN WILMSHURST presents the ol. terebinthinæ rect. as a valuable anæsthetic. He says: "The first case in which I tried its effect was that of Mrs. H., matron on board the emigrant ship *Indiana*, of which I was then surgeon-superintendent. About twelve months ago, having exhausted my little stock of chloroform, and the patient suffering from violent neuralgia in the course of the supra-orbital nerve, it occurred to me, that of the remedies at hand the most likely would be the vapor of turpentine. This I immediately applied, sprinkled on a handkerchief, to the nostrils, similarly to chloroform, and was surprised to find it not merely soothe and allay the pain, but, after a few inhalations, produce a gentle sleep and state of anæsthesia, from which she awoke without any headache or other unpleasant symptoms, and quite free from pain.

"I may mention, without going into detail, that I have since tried it in one or two slight but painful operations—as extracting a broken needle from a sensitive part, and in some cases of cramps, convulsions, nephralgia, calculosa, etc. Its effect seems to be to allay nervous irritation, spasm, and pain, without deranging the action of the heart, and to produce a calm, anæsthetic sleep. The remedy being simple, inexpensive, and easy of application, will, I trust, induce some of your numerous readers, more skilled, and with better opportunities of testing its value, to experiment in the direction I have indicated, and to publish the result for the benefit of suffering humanity."

"*Cast of the Mouth of a Child, the subject of Congenital Syphilis.*—MR. NUNN showed to the Pathological Society of London casts of teeth from a girl with strong manifestations of syphilis in other parts of the body, observing that the stunted and deformed characters there seen corroborated the views of Mr. Hutchinson respecting the syphilitic origin of such teeth, which were well known to the Society.

"Mr. Thompson thought it was important that the conclusion should not be arrived at that defective teeth of this kind were necessarily the result of a syphilitic taint. He had carefully examined Mr. Hutchinson's cases, and was satisfied that these were syphilitic; but he had seen many others, respecting which he was equally satisfied that no taint existed. The real state of the case appeared to be that stomatitis of any kind would produce defective teeth, but that syphilis was the most powerful and most common agent in producing them. Mr. Hutchinson did not say that all notched and malformed teeth were due to syphilis, but he (Mr. Thompson) thought that there was an impression abroad that such had been regarded as the case.

"Dr. Graily Hewitt agreed in the main with what had fallen from the preceding speaker, but was satisfied that the cases he had seen of Mr. Hutchinson's (as one also of the committee for reporting on them) were of syphilitic origin.

"Mr. Nunn thought that Mr. Hutchinson's subsequent paper, in the tenth volume of the Society's 'Transactions,' had been overlooked in the discussion. Mr. Hutchinson there distinguished the different forms of malformation observed.

"Mr. Hulke thought some of the cases were syphilitic, but in many proof was wanting that these imperfectly formed teeth were due to syphilitic taint.

"Mr. Barwell had a case under his care of well-marked malformed teeth of this kind, in the origin of which he was certain there was nothing syphilitic. He believed that in any strongly-marked case of cachexia such appearances might exist, whether in connection with rickets, scrofula, or other diseased constitutions."—(*Lancet.*)

Coralline.—"A Dentist" thus points out, through the columns of the *Lancet*, an objectionable constituent of this substance: "Coralline (colored vulcanized India-rubber) being now extensively employed as the basis of artificial teeth, it requires to be satisfactorily determined whether the subsulphate of mercury used for the coloring is likely in any case to produce prejudicial effects. The material being very hard and insoluble, and not capable of being much softened even in boiling water, (the dentists employ steam of 230°,) there seems no danger from the vermilion pigment; yet, as the extent of surface in a full set of teeth is twelve or fourteen, or more, square inches, and the material, at the temperature of the human body, is acted upon day and night without ceasing by the saliva, and the gums and tissues which come in contact with it are peculiarly susceptible of mercurial influence, it may not be quite certain, without the test of experience, that no evil can arise in the case of a morbidly sensitive invalid. If any such cases had been known to occur, the dental profession would assuredly have changed the cinnabar for some other pigment. But the use of the material is recent, and it would be well to watch the testimony of facts as to whether any of the symptoms of mercury (not amounting to salivation or other marked phenomenon) can be suspected in the mouth, or pharynx, or alimentary canal."

"*Wood's Fusible Metal.*—Lipowitz has made some experiments on the cadmium alloy, described by Dr. Wood. He found that an alloy composed of 8 parts lead, 15 parts bismuth, 4 parts tin, and 3 parts cadmium, possessed the following properties: It is permanently silver white, and has a brilliant metallic lustre; it is not so brittle or hard but that it may be obtained in thin leaves or flexible plates; it has a fine-grained fracture, and may be filed without stopping up the file. In dry air it keeps its polish. It expands in cooling, but not so much as bismuth or antimony. Its specific gravity is from 9·4 to 9·41. It softens between 131° and 140° Fahr., and near 140° becomes perfectly fluid. No change in the condition of the metallic mass was observed on remelting after rapidly cooling the alloy. The above properties show that the alloy may be applied to some useful purposes. It may supersede all the quicksilver alloys for stopping teeth ; it may be used as a solder whenever the metals soldered are not likely to be exposed to heat. Tin, lead, and Britannia-metal may be soldered together under water above 160° Fahr. Zinc, iron, copper, and brass may also be soldered with the greatest ease under water to which a little hydrochloric acid has been previously added. The alloy is so easily fusible that it may be melted on a piece of paper over a spirit-lamp. In the preparation of the alloy the author recommends the use of the purest bismuth."—*Dingler's Polytech. Jour.*, Bd. clviii. s. 271 and 376.—(*Chemical News.*)

"*Oreide of Gold.*—This substance, of which so many articles called jewelry are now made, is simply an alloy of copper and zinc—a brass of a peculiar color resembling 'jeweler's gold' of about 16 carats fine—copper and gold mixture. It is the invention of MM. Mourier and Vallent, two Frenchmen. It was patented in France in December, 1854, and in the United States in March, 1857. * * * It is composed of 100 parts (by weight) of pure copper, 17 of zinc, 6 of common magnesia, 3·60 sal-ammoniac, 1·80 quick lime, and 9 of crude tartar. The copper is first melted in a crucible, then the magnesia added, then the salammoniac, lime, and tartar separately, and in powder. These are kept from contact with the air, and all well stirred for about 20 minutes, until they are incorporated together. The zinc is now added in strips, which are thrust below the scurf formed on the top of the crucible. The mass is now stirred, the lid put on the crucible, and its contents kept fused for about 25 minutes ; after which the crucible is opened, the slag skimmed carefully from the surface, then the molten alloy is poured out into ingot moulds if it is required to be rolled, or into iron moulds if designed for castings. When designed for works of art, however, it is best to cast it into ingot form first, then melt it in a furnace, and cast it. This alloy is very beautiful, and well deserves the name 'oreide of gold,' as it greatly resembles the precious metal. It is very ductile, and may be rolled into very thin leaf; but it is nearly as easily tarnished as common brass. We believe it may be used for making excellent tubing for marine boilers, and think it may be more usefully employed for this purpose than in furnishing two-penny trinkets for street-sweepers. It is manufactured upon an extensive scale by Messrs. Holmes, Elton, Turrell & Co., of Waterbury, Conn., assignees of the American patent."—(*Sci. Amer.*)

"*An Instrument for Keeping the Mouth Open in Operations under Chloroform.* By ALFRED COLEMAN, M.R.C.S., etc., Dental Surgeon to the Metropolitan Free Hospital.—This instrument is constructed upon the principle of a pair of forceps, with this difference, however, that the handles do not cross each other at the hinge, so that, by pressing them together, the blades or short extremities are separated. About the hinge the instrument is curved upon itself. Attached to one of the handles is a spring-catch, which keeps the blades fixed at any required distance from each other. The extremities of the blades are made broad, and covered on their outer surface with vulcanized India-rubber. In using the instrument the handles are opened, and the blades brought together, and the latter are introduced between the teeth at the back of the mouth, at the opposite side to that on which any operation is to be performed. The curve of the instrument adapts itself to the cheek and prevents either the handles or blades being in the operator's way. By compressing the handles, the blades, and consequently the patient's jaws, are separated from each other, and by means of the catch can be maintained in the required position at the will of the operator.

"The instrument was constructed and is best adapted for operations on the teeth under chloroform, but it has been found useful in other operations on the mouth as well. It possesses the following advantages: Of being readily introduced into, and removed from, the mouth; of quickly increasing or diminishing the distance of the jaws from each other; of enabling the assistant who administers the chloroform to apply this agent from time to time without removing the instrument from the mouth; of being quite out of the way of the operator; and, by means of the vulcanized India-rubber pads, of avoiding all risk of injury to the teeth or gums."—(*Med. Times and Gaz.*)

"*Solution of Gold in the Body.* By T. WORDSWORTH POOLE, M.D.—Having known considerable anxiety caused by the swallowing of pieces of dentists' gold plates, I was led to make a few trials on animals with solid mercury and diluted sulphuric acid, given some time after the gold was swallowed. The gold was rendered brittle and partly dissolved in the mercury, and the animals seemed to suffer no bad consequences. I hope that by your permitting this suggestion to appear in *The Lancet* some one of more experience may undertake the matter, and form a determinate method of treatment."

MISCELLANY.

In the course of an interesting paper on the relative effects of the two principal anæsthetic agents, sulphuric ether and chloroform, (*Amer. Jour. Med. Sciences*, April,) DR. F. D. LENTE relates the following instance in illustration of the comparative superiority of the former over the latter: "It may not be out of place to relate a case which occurred a year ago, in my own practice, as showing the greater facility with which recovery ensues from too thorough anæsthesia from ether than from chloroform. The operation consisted in the removal of a fibrous tumor from the submaxillary region, together with the submaxillary gland. It was requisite that the insensibility should be complete; and, in addition to this, the necessity for keeping the handle of a knife in the mouth in order to force out the tumor, and render it salient externally, tended to impede the respiration still more. The ether was superintended by a surgeon attached to a large hospital, and well acquainted with the action of anæsthetics, who noticed, after the inhalation had proceeded satisfactorily for some time, and after the operation was nearly finished, that the respiration and pulse were both failing. Further proceedings were immediately suspended, and for a time the danger seemed imminent. The window was opened, a little water dashed in the face, and the patient allowed to remain perfectly quiet. In a few moments he revived, the respiration and pulse resumed their natural rhythm; he was again brought under the influence of the ether, and the operation completed. It was not only my opinion, but that of at least two of the hospital surgeons present, that had it been chloroform instead of ether, the case would not have terminated so favorably."

In the course of a review of a work on "Chemistry in its Relations to Physiology and Medicine," (*Ibid.*,) it is stated that the author—Dr. Day—divides the fluids of the body into five groups, and that "under the first group the saliva is first considered; and after the chemical properties of the secretion from each gland separately, and of the mixed saliva, have been pointed out, the author takes up the question of their physiology. Dr. Day does not, we think, give sufficient prominence to the experiments of Bernard relative to the uses of the parotid, submaxillary, and sublingual saliva separately. Most of our readers are doubtless acquainted with the results which this physiologist obtained, showing that the secretion of the parotid gland is mainly of use in facilitating mastication, that of the submaxillary in assisting taste, and that of the sublingual in promoting deglutition. The influence of saliva in causing the conversion of starch into sugar is affirmed by Dr. Day; and though there is no doubt that it does effect this change out of the body, and to some extent in the mouth, we doubt whether Dr. Day does not go too far when he says that it is almost universally admitted that the principal use of the salivary secretion is to promote the conversion of the amylaceous portion of the food into dextrine, sugar, and lactic acid, and thus to promote its absorption. This view is objected to by several of the most eminent physiologists of the world; and though there are some facts which seem to support it, there are others, again, which go to show that the power to effect the change in question is incidental, and of no practical importance whatever. The matter is not settled, and physiologists have still an ample field for research before the true action of the saliva in this respect can be ascertained."

The following summary of a case of the removal of the inferior maxilla for osteo-sarcoma is given in the *Am. Jour. Med. Sci.*: "DR. J. R. DICKSON, Prof. Surg. in Univ. of Queen's Coll., Kingston, C. W., reports (*British Am. Jour.*, Feb. 1861) a case of this in a man sixty years of age, having a rapidly increasing malignant osteo-sarcomatous tumor, extending along the entire left half of the inferior maxilla. The operation was performed on the 18th of June, 1855, the patient being partially under the influence of chloroform. The case went on favorably, and on the 22d of July the patient was discharged, apparently cured. On the 13th of the following December the patient returned, with a reappearance of the disease in the cicatrix, and on the 16th of March, 1856, death terminated his sufferings, nearly nine months after the operation."

The same publication gives from the *Gaz. Med. de Paris* the following instance of extirpation of the entire parotid: "M. MARZOLO relates (*Gazetta Medica Italiana*) a case of a woman fifty years of age, in whom he extirpated, he asserts, the entire parotid, preserving the facial nerve and the external carotid artery. In six weeks the cure was complete, and eleven years afterward she remained in perfect health, presenting no indication of a return of the disease."

In his correspondence from Edinburgh to the *Amer. Med. Times*, DR. DAVID P. SMITH writes that "PROFESSOR MILLER remarked that, in cases of hæmorrhage after the extraction of a tooth, he felt warranted by his experience in saying that the very best possible thing you could do was to, without delay, apply a compress soaked in tr. matico, and keep up continual pressure with the finger. A case of hæmorrhage from the gum occurring in an old lady had taught him that the actual cautery was not the thing. A few hours after each application, hæmorrhage recurred from the local excitement caused by the attempt to throw off the slough. Each application of the hot iron made matters worse, and the case terminated unfavorably."

In the course of an interesting paper on cretins, copied from the *London Med. Rev.* into the *Southern Med. and Surg. Jour.* for February, the following, among other characteristics, are given :—

"First Section—Cretins limited in their fecundity.—These are remarkable on account of the smallness of their stature, which makes them appear like stunted dwarfs, and by their uncertain and wavering gait. Their hair is very dark and bristly, their skin is black and rugged, and probably contains more pigment than in the normal condition. The fundamental principles of cretinism are strongly shown in the superior and posterior flattening of the head, and in the exaggerated development of the temporal portion and of the zygomatic arches. The nose is small, rounded, and crushed down at its upper part, the lips are thick and coarse, the tongue is hypertrophied, the flesh is soft and flabby, and the chest is narrowed. Menstruation is tardy and irregular, and is in proportion to the limited fecundity of these degenerate beings, who produce only an abortive offspring, or scarcely living children.

"Second Section—Sterile Cretins.—The external appearance is the same as in the preceding; the stature and physical constitution are also identical. In both sections the upper eyelid is disproportionately elongated, void of contractility, and overlaps the eyeball in an ungraceful manner; the tongue is thickened, and the speech embarrassed. The difference arises in the internal characteristics. The organs of generation are either atrophied or only sparingly developed. Many of the cretins in this class have no second dentition; their average length of life is limited, and at twenty-five or thirty years of age they present symptoms of decay. Goitre is very rare in this division."

The *Annual of Scientific Discovery* has the following on the denture of birds: "*Hen's teeth* have been numbered with the Greek kalends, but M. Geoffroy Saint-Hiliare discovered in 1806 that fœtal birds have rudiments of teeth, and M. Blanchard, an assistant in the Museum of Natural History at Paris, now announces that some birds have regular systems of teeth, the number of teeth being unequal."

Championnière's Jour. of Pract. Med. states, upon the authority of *le Art Dentaire*, that "Mr. Bergounhioux, desirous of testing the stupefying effects of the solaneæ upon the last nervous ramifications, applied a solution of atropia directly upon the denuded dental pulp. When this pulp is painful, without, however, being in a state of acute inflammation, the contact of one or two drops of a solution containing one hundredth part of its weight of sulphate of atropia instantly deadens the pain so completely as to allow of the use of the rasp and excavators. As a happy illustration of the anæsthetic power of this solution, Mr. Bergounhioux adduces the insertion of the pivot of artificial teeth into the living roots, without any necessity for the destruction of the dental nerve and blood-vessels by means of cauterization."

Cassell's Pop. Nat. Hist. gives the following description of the denture of the narwal, or sea unicorn: "This creature has no true teeth, but two tusks, analogous to those of the elephant, implanted in the intermaxillary bones. The left one is enormously developed, projecting straight forward with the line of the body, being spirally twisted, and tapering to a point. Its length is from six to eight or ten feet; the tusk on the right side is imperfectly developed, seldom advancing far out of the socket, and sometimes not appearing beyond it. Should its companion be broken off it begins to increase, but it never equals the lost one. * * * * * Such is the velocity of this animal, and the impetus of its course, that it has been known to plunge its tusk through the side of a vessel, which has been snapped off in the timbers by the violence of the blow."

In relation to the denture of another branch of the cetacea, the same publication says: "The fourth genus comprehends creatures of huge bulk, which pursue their prey, consisting of seals and large fishes, with a rapacity rarely equaled. The head is of prodigious size; the upper jaw has no teeth; but the lower jaw, of enormous weight and solidity, fits into a groove in the upper, and has a range of short cylindrical or conical teeth on each side, received into corresponding cavities in the upper jaw, the gum of which is exceedingly hard and callous. The higher portion of the skull consists of a series of large cavities, filled with a clear, oleaginous fluid, which hardens on cooling, and is known under the name of spermaceti, but more properly *adipocire*."

According to the *Amer. Druggists' Circ.*, "A process for preserving caoutchouc milk in its liquid state is said to be patented and used in this country. The method consists in adding to the fresh juice simply 6 p. c. of aqua ammoniæ. Whether it is patented, you may ascertain through Munn & Co., of this city."

In a communication to the *Sci. Amer.*, A. HITCHCOCK, of Chicago, Ill., "states that, by cold-rolling wire so as to flatten it one-fourth and one-third of its diameter, its strength is increased from ten to twenty per cent. He suggests that flat-rolled wire be used for making the next Atlantic Telegraph cable, as such wire is peculiarly adapted for plaiting—a form of cable which would have great elasticity."

BIBLIOGRAPHICAL.

A Book about Doctors, by J. Cordy Jeaffreson. Reprinted from the English edition. New York: Rudd & Carleton, 1861. One large crown octavo volume, 500 pages, handsome type and print, with a photographic illustration after HOGARTH. Bound in extra muslin, price $1.50. For sale by John McFarlan, 33 S. 6th Street, Philadelphia.

This is a very entertaining and instructive book, adapted to both the drawing-room and study. Its scope, and the character of its contents, may be seen by the following, from the prospectus:—"There are chapters on rich physicians and poor physicians—on Fees; recipes for securing large ones, and amusing instances of their entire loss—on generous and parsimonious patients, and how to manage both—on Doctors in love and Doctors' quarrels and duels—on nervous and imaginative patients, and their treatment—on Female physicians, and literary physicians—on the vices and the virtues of Doctors--on apothecaries and hospitals—on court physicians and country Doctors—on eccentric and speculative physicians—on Quacks—on experimental physicians—on failures and successes—on medicines, instruments, and epitaphs—indeed, on every topic and matter in any way relating to the profession, this book is most entertaining and amusing."

THE

DENTAL COSMOS.

NEW SERIES.

Vol. II. PHILADELPHIA, JUNE, 1861. No. 11.

ORIGINAL COMMUNICATIONS.

PRACTICAL HINTS.

BY J. D. WHITE.

Tidiness of the dentist is one of the first things which it is his duty to study, and yet it would seem, from many circumstances, that the subject does not receive much attention. Writers have not given it as much consideration as many small mechanical matters which any one's own judgment would properly decide upon. There is a kind of law regulating the tidiness or manner of serving a patient, while in the presence of a dentist, as any other thing we do in life; hence there ought to be some kind of rule laid down, or understood, for the consideration of the dental student, and such detailed hints given as to afford him some kind of guide to be governed by, else he may run from one extreme to another before he knows what he is about, and become disgusting by his own uncultivated inclinations. *Manners* on the part of the dentist, when he is about his patient at the operating chair, is as essential as proper behavior at a dinner-table; and we are sure a great deal has been said by authors of large abilities on that subject. We do not pretend to hold ourselves up as without fault, or to dictate rules and regulations to others, but to refer to some things which would seem to strike the mind as self-evident, yet do not receive proper attention. A dentist in full practice has not the time for drawing-room formalities or all the courtesies of morning calls, nor does any one of common sense expect it; his office and waiting-rooms are places of business, and the majority of persons who call upon him are business people, or in haste from one point of duty to another; and it is not uncommon in these days of railways and steamboats, that well-bred persons commit the most uncivil and annoying interruptions at the dentist's office for want of time to do better; so in like manner, the dentist, to make time for the patient in hand, is obliged to treat very summarily a patient making a first call, and incurs much censure by it; but good sense on both sides will make in such cases every allowance. It is better for the dentist so to act as to meet the good sense of the intelligent, than to waste time to prevent the ignorant or exacting from finding fault. Biography is said to teach better, perhaps, than anything else, how the good and great have achieved their most noble purposes in life; and while straight and hard lines seem to have marked their career, it is remarkable to see how every act is filled in with attention to the smallest things incident to their every duty. By knowing others' faults we should learn to correct our own. But to some details. It is essential that a dentist should have everything in his office to afford comfort and convenience to his patients. His chair should be comfortable and clean; he should place a large, clean towel over the head-piece of his chair, so as to extend a little way down the back; this should be removed as soon as it is in the least soiled, and in these days of *youthful-looking hair*, the changing will become frequently necessary; to place the patient's head against the plush of the head-rest of the chair, is not allowable. It is necessary that every patient should be furnished with a clean napkin and glass of tepid water—a little cologne is desirable, but some few persons cannot tolerate it. The head of the patient should be so placed as not to touch the breast of the operator while operating, as it soils his dress and is uncomfortable to the patient, especially in warm weather. The rule which some dentists practice on, that the patient must endure every *inconvenience* for the time being for the *convenience* of the dentist, is not good practice, or just in any sense. Whistling and humming tunes in the presence of the patient is vulgar in the extreme. Every dentist should even learn how to *breathe* while operating, because it is true that the breath is not always free from some taint in any one, and where it is habitually bad, it is very unfortunate. A great deal of annoyance may be avoided by the operator breathing through his nose when his face is turned toward his patients while operating or in close proximity to them, or abstaining from speaking while in that attitude. A dentist to hold his mouth open and breathe full in the face of his patients while operating, is enough to suffocate them; and if there is the slightest taint of anything on his breath, it is intolerable.

A lady patient visited us a short time since from a great distance, leaving a good dentist; it was with difficulty we could wait on her, and we remarked how useless it was to put herself to such inconvenience when she had so good a dentist near her own home. "Oh, I got tired of the stench of old coffee-grounds breathed in my face all the time," was her reply.

It is useless to enumerate the many articles of diet which affect the breath, which a dentist should avoid during operating hours. Tobacco and liquors in any form, as a matter of course, must be abstained from by every well-bred dentist, before approaching a patient, and every attempt to hide their effects by artificial means makes the evil worse and the suspicion greater. If such habits have been contracted by any one before he adopts dentistry as a profession, it is most unfortunate.

Clean hands may be said to be one of the most important matters connected with the dentist's duties. Besides the necessity of having every convenience to wash his hands frequently, he should study how to prevent them from becoming offensive or soiled. The saliva of some patients becomes very unpleasant when exposed to the air, and when it gets on the hands it soon renders them offensive; hence we always use a small finger napkin on the lips of the patient, to answer the double purpose of preventing the instruments from chaffing them, and keeping our fingers dry; we also keep a lock of cotton in the left hand, between the fingers, to receive the decay as it is removed from a tooth to avoid getting it in contact with the fingers, as there is nothing so difficult to remove as the fetor of the decay of a tooth when it gets into the skin. We were present once when a dentist of distinction was operating, and saw him remove the decay from a tooth and wipe it on his finger, which disgusted us very much. The use of scented soap does not effectually remove such stench. We never use highly-flavored soap for the hands, as that in itself is eventually disgusting. Clean, inodorous soap is preferable. The nails on the fingers must be kept reasonably short, and clean.

(To be continued.)

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TREATISE UPON THE GENESIS AND DEVELOPMENT OF THE DENTAL FOLLICLES TO THE EPOCH OF THE ERUPTION OF THE TEETH.

BY DRS. CH. ROBIN AND E. MAGITOT.

[Translated for the DENTAL COSMOS, from the "*Journal de la Physiologie de l'Homme et des Animaux,*" DR. E. BROWN-SÉQUARD, editor, by E. SUREAU.]

As soon as the first vestiges of ivory appear at the summit of the papillæ, in the shape of small caps of dentine, the tissue of the bulb entirely ceases to grow in height on the side of the papillæ; but it continues to increase in size, and especially in width, on the side of the vessels, until the different caps of ivory, united to each other, reach the place of the greatest circumference of the organ. The bulb then ceases to grow larger, and at this moment its size answers exactly to that of the future crown, provided that it is joined with the body of the first bed of ivory, itself capped with the bed of enamel. The period when the coronary portion of the bulb ceases to increase, corresponds exactly to the moment of its envelopment by the first bed of ivory.

As soon as the preceding phenomena are manifested, the bulb, while diminishing in size, changes its form. The width of the bulb decreases progressively in proportion as the first bed of ivory thickens, and at the same time the bulb essays an elongation corresponding to the formation of the base of the crown and to the development of the roots, so that it is gradually inclosed in a cavity, which is formed by the successive productions of the ivory—this is the pulp-cavity afterward found in the adult.

When the crown is completely produced, the bulb still continues to lengthen in proportion to the development of the roots, and it is at this time that its base is seen changing its shape. These changes are especially apparent in the molars. In the latter, indeed, the bulb, like the triturating surface of the crown, produces as many divisions as there will be future roots. When these divisions of the bulb are externally marked and have become distinct, they continue to lengthen simultaneously with the roots of the tooth itself, each of them being lodged in the corresponding root, and adhering strongly by their radicular extremity to the wall of the follicle. These divisions of the bulb, like the part occupying the centre of the crown, preserve a certain thickness during the whole period of childhood, that is to say, their diminution is but slowly effected; while in the adult, on the contrary, this diminution seems a little more rapid in the same time than the increase in the thickness of the ivory. These two contrary phenomena are perfectly regular, and continue to an advanced age, and this progressive atrophy of the bulb may be observed in some old persons even until the organ has completely disappeared.

To recapitulate, we can in a manner assign three successive phases to the general evolution of the bulb: 1st. It gradually increases in size until the time when its summit is covered by the primitive cap of dentine. 2d. The bulb ceases to enlarge at that time, but it continues to rise in height, while the crown is simultaneously increased in width. 3d, and finally, this last phenomenon terminated, the coronary portion of the bulb ceases to grow larger, and radicular prolongations are detached from the base.

It is through the whole duration of these phenomena that the modifications of texture are effected, which give the tissue of the bulb a greater and greater consistency. These modifications can be observed in all the species of animals, and are always in constant correlation with the general changes in the form and size of the tooth.

But before we set forth these particularities (to which we will return, since they are not the same through the whole period of the dental evolution,) it is necessary that we should indicate the texture of the bulb at the time.

From the time when the summit of the bulb becomes distinct in the tissue, at the heart of which it begins to appear, it is constituted of ovoid nuclei which are from $\frac{7}{1000}$ to $\frac{8}{1000}$ of a millimetre in length, with a clear, grayish outline, more granulated and smaller than the embryoplastic nuclei of the surrounding laminated tissue, but without nucleoli. This tissue then contains only nuclei—they are very close to each other without being contiguous, because a small quantity of slightly-granulated amorphous matter lies between them. This amorphous matter is so resistant that it gives to the entire bulb, and to the fragments of its tissue, a certain consistency which it is difficult to destroy, and also an elasticity which makes it slip between the plates of glass when it is a little compressed. This, added to the nearness of the nuclei constituting the tissue, gives it an appearance which is altogether peculiar.

The amorphous matter extends about $\frac{1}{100}$ of a millimetre beyond the most superficial nuclei at the periphery of the bulb, and exhibits no molecular granulations, or only very few in comparison to that which is interposed between the nuclei.

At this time no cell of ivory exists at the surface of the bulb in the thin bed of amorphous substance. The surface of the latter can be torn as cleanly as the rest of its depth in the yet fresh nascent bulbs. But gradually, even before the cells of the ivory originate, the surface of this amorphous matter becomes denser than the subjacent part, commencing at the summit of the bulb, and it is easily corrugated.* When the tissue of the bulb is torn, this superficial bed detaches itself from the subjacent portion in extremely transparent strips, without granulations or striæ, so thin that two lines more than measure its depth.

This bed or membrane folds with the greatest facility and is readily detached, but irregularly, by tearing, when the bulb begins to be affected by the cadaveric changes. We will see hereafter that it ceases to exist at the point of junction between the base of the bulb and the follicular wall, when, instead of the nuclei of the former, we find laminated fibres at the base and in the wall, forming the inner surface of the wall as well as its thickness.

§6. *Of the Organ of the Enamel in particular.*—We are already aware that a very short time after the wall of the follicle reunites in a closed cavity, there originates between the inner face of the wall and the surface of the bulb, a thin gelatiniform bed, composed of star-studded fibro-plastic bodies, which are ramified and anastomosed. This membrane is the organ of the enamel, which soon exhibits on its deep or bulbular surface the continuous range of the cells of the enamel; these are prismatic and vertically arranged, and when seen as a whole under the microscope appear like a clear band, (pl. 2, fig. 3, *c*.)

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* Raschkow has given the name of *membrana præformativa dentis* (1835) to the superficial bed of the bulb. He has also noticed that the tissue of the latter is distinguished from the tissue of the organ of the enamel by the granules which compose it, and later by its nerves and vessels. The bulb, which is vascular before the appearance of the dental cells, does not at this time contain nerves—these vessels and nerves we will hereafter describe. The thin membrane, of a cellular nature, proper to it, described by M. Oudet (*loc. cit.* 1835, art. *Dent.*, p. 98,) cannot be seen on the surface of the pulp, unless the organ of the enamel is the matter in question.

The wall of the follicle shows the same external configuration as the bulb upon which it is shaped, and consequently the space insensibly produced between the two also exhibits the same form. The organ of the enamel, exactly occupying this space, is then represented by a real plate of nearly the same thickness throughout; this plate is about $\frac{1}{100}$ of a millimetre in depth at the origin of its development, and becomes gradually thicker. It is moulded upon the intra-follicular, or non-adherent surface of the bulb, with which, as we have already stated, it has elsewhere no connection, except the simple relations of contiguity. The general form of the organ is then that of a bed arranged like a hood or a hollow cone, with a depression, single or multiple, according to the species of tooth—the deep excavated face exactly covers the whole projecting part of the bulb. The circumference of the base is thinner than the rest, and fills the furrow which the inner face of the follicular wall forms with the bulb, near their point of union.

From the time of its appearance we can distinguish in the organ of the enamel two faces, one follicular, the other bulbular, and an edge.

We repeat that the follicular face adheres by contiguity to the inner face of the follicular wall, of which it follows the outline, and reproduces its configuration, so far as the compression has not separated them. This anatomic arrangement, which becomes still more distinct in the sequel, shows the facility with which the detachment of the organ is effected, just as the consistency of the firm gelatine of the tissue exhibits the remarkable exactitude with which it preserves, even when separated from the follicle, its conical or cuneiform, mammillated form, which is the exact reproduction of the external shape of the bulb itself.

The bulbular face, opposite to the preceding, lies against the surface of the bulb, to which it also adheres by simple contiguity, and from which it will be afterward separated by the production of the dentine. The development of the bed of cells, called cells of the enamel, likewise occurs on this bulbular or deep face. These cells form, at a later period, the prisms of the enamel.

The edge is thin, pale, and transparent, and lies exactly in the furrow, which follows the circumference of the base of the bulb until it meets the follicular wall.

The organ of the enamel folds easily, on account of its membranous disposition, under the preceding conditions, or when the pressure of the follicle has removed it entirely or in places from the bulb, or the follicular wall. These folds are very thin and delicate, in consequence of the transparency of the organ; they often start from the summit of the bulb or its papillæ, and run toward the base more or less parallelly with the outline of the wall.

The organ of the enamel, absolutely without vessels, is from the time of its appearance composed of embryo-plastic nuclei, and limpid amorphous matter without molecular granulations, which originate between the wall and the surface of the bulb. These nuclei rapidly become quite large, with a distinct outline, clear in the middle, and often with one or two nucleoli. They become the centre of generation for as many fibroplastic bodies, which are generally star-studded, and have fibrillar prolongations, which are quite rigid, and often anastomosed: the interstices between them are filled with the amorphous matter mentioned above. The particular gelatinous consistency of this tissue, which is much less than that of the bulb, is owing much more to the intercrossing of the fibrils, and to the anastomoses of one embryo-plastic body with another, than even to the consistency of the amorphoūs matter considered individually, which fills the intervals and gives the tissue its transparency by its presence. Unlike that which is seen in the bulb, it is soft by itself, and becomes ropy and viscous in the destruction of the organ, reduced by liquefaction into little pale drops as soon as the fœtus is injured, or the preparations are in water for some hours.

It is when this occurs in the dead body of the new-born beginning to putrefy, and in the fœtus preserved in alcohol, that the organ of the enamel reaches the state of a viscous liquid, which ropes like synovia, and is yellowish or reddish in color. This matter is formed of a finely-granulated fluid, containing some cells of enamel, and star-studded fibroplastic bodies, with their fibrils broken off more or less near the nuclei. These substances of the follicles are forced out when the wall is cut. In infants, but a short time dead, and in the veal and lamb of the butcher's stall, it does not exhibit this fluidity; it remains transparent and elastic, like the firm jellied gelatin, and can be torn into small fragments which slide under the plates of glass. Later, when we give a detailed description of the elements of the organ of enamel, and of the evolution of the latter, subsequent to the appearance of the ivory, we will exhibit the curious modifications that occur in these star-studded bodies soon after death.*

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* It is not probable that this is the organ of the enamel of which Hunter is speaking when he says that the envelope of the pulp is composed of a soft, spongy lamina, without vessels, *and of another inner one, which is much more resistant, and extremely vascular, receiving its vessels from those which go to the pulp* and forming a sort of capsule for the pulp and the tooth. It is certainly of the organ of the enamel softened, as we will describe it, that he speaks, when he adds that a mucilaginous liquid, resembling the synovia, is always found interposed between that membrane and the pulp. M. Oudet, on the contrary, describes the internal membrane that he admits is in the follicle, as being smooth and polished like the synovia, which is due to the limpid liquid, merely disturbed by light flocculi and of a mucilaginous consistency, which is contained in the cavity. (*Loc. cit.*, 1835, p. 97.) The presence of these flocculi of the star-studded fibroplastic bodies, either anastomosed or not, shows that the organ of the enamel, liquefied by cadaveric alteration, is the matter in question here.

Thus we see that there are no great difficulties in the examination of the mode by which each of the constituent parts of the follicle originates, or makes its first appearance. This is also the case in the study of the ulterior phenomena of their development.

In a series of favorable preparations, we can follow all the successive phases of the genesis, development, and atrophy of each element of the follicular apparatus. We have seen that the dental bulb, or organ of the enamel, is the first to appear, and we have recognized it at its commencement as a small, conical mass, trenching by its opacity upon the surrounding tissues. The first rudiments of the follicular wall afterward show themselves around this little mass, and when this wall completely surrounds the bulb, the organ of the enamel appears between them.

Such are the facts of the evolution and the constitution of the follicle in man and most of the mammiferæ. But we will find hereafter that in certain species, the pachydermata, for example, the follicle contains another organ filling a special office. This organ is the germ of the cement, formed of a soft, vascular fibrocartilage, and which changes the tissue, of which the cement is constituted, into the condition of bone properly so called.

On what point of this completed follicle should the constituent elements of the tooth, properly so called, appear? It is at the summit of the simple or multiple papillæ of the germ of the ivory, in the most superficial bed of the organ, and consequently, beneath the deep face of the germ of the enamel—here the first cells of the ivory are produced, and to them succeeds the little cap of dentine. The development of the ivory then gives rise to the separation of the two germs, of the ivory and the enamel, with the atrophy of the latter. This separation is still more increased by the ulterior phases of the evolution and of the thickening of the bed of ivory.

This first appearance of the tooth, properly so called, answers in man, according to our observations, to a period varying between the eightieth and eighty-fifth day, and it takes place primitively in the heart of the follicle of the lower middle incisor.

CHAPTER III.

STRUCTURE OF THE PRODUCTIVE ORGANS OF THE TOOTH, GENESIS AND DEVELOPMENT OF THE TISSUES WHICH COMPOSE IT.

The dental follicle, considered as a whole, has reached the period of complete development at the moment when the phenomena of genesis and development of the tissues constituting the tooth (ivory, enamel, and cement) exhibit themselves. Each of the parts of which it is composed has been subjected to modifications of intimate structure, the accomplishment of which precedes the debut of its physiological *rôle*. We will now examine correlatively, on one hand, the anatomical structure of each productive organ, and on the other, the office which it fills; these subjects will be considered in as many distinct paragraphs, which will form the subdivisions of the present chapter.

§1. *Structure of the dental bulb or germ of the ivory.*—We have already described the different modifications of form and size of which the dental bulb becomes the seat, from the moment when it appears near the bottom of the groove until the commencement of the production of the ivory; it now remains for us to determine exactly the intimate structure of the organ at the time of the commencement of the phenomenon of *dentification*, and during its continuation.

When the dental bulb of the vertebrata is examined comparatively in the heart of the follicle, we are struck, as we have already stated, with the uniformity of the type of general configuration which the organ exhibits between different individuals, in each species of teeth. Besides the differences of size, it is impossible to confound the bulbs of the incisors with those of the canines or molars, either in the same species or different ones, and that during all the phases of evolution. This particularity will exonerate us from giving a special description of the bulb for each species of animal successively, the form of the bulb being an exact repetition of that of the crown of the corresponding tooth. On the other hand, the analogies of intimate constitution are not less striking. To give the description of the bulb in due order, we will treat successively: A, the proper tissue of the bulb; B, its vessels; C, the nerves; D, some secondary particularities of structure, such as the production of calcareous grains, etc. interiorly.

a. Proper tissue of the dental bulb.

The tissue of the mass of the bulb is composed of ovoid nuclei, sprinkled in great number through a slightly-granulated, transparent, homogeneous substance, and which are at a later period accompanied by laminated fibres, vessels, and nerves.

TISSUE OF THE BULB IN THE FŒTUS.—As we have previously stated, these nuclei are analogous to the embryo-plastic elements, but they are of a darker gray, less clear at the centre, because they are more granulated; the granulations being grayish, quite dark, and slightly brilliant at the centre. These nuclei have no nucleole, whereas the embryo-plastic nuclei, properly so called, which are mingled with them near the junction of the bulb and the wall, usually have one. They are smaller, and of a less elongated ovoid than the latter, for they are only from seven to eight-thousandths of a millimetre in length, rarely reaching nine-thousandths. Finally, their outline is darker, (pl. v, figs. 2 and 4.) They are, however, insoluble in acetic acid, and strongly resemble, in general appearance, those which are found in the bulb-tissue of hair and feathers. They approach each other without being contiguous, and the interval separating them, which is filled with amorphous matter, is from one to four times their diameter, according to age and region of the bulb; thus, in aged subjects they are a little more removed from each other, and also nearer to the edge than the centre of the bulb or of its projections. These nuclei are quite generally disposed parallelly to each other, and their greatest diameter is as commonly parallel to the vertical axis of the bulb; this arrangement is very evident and very elegant in the long and thin prolongations which, from the base of the bulb, penetrate into the divisions of the crown in the ruminantia, pachydermata, etc.

The amorphous matter interposed between the nuclei is tenacious, elastic, and quite resistant under the needles used in tearing it. It is remarkably transparent near the surface of the bulb, and in the prolongations which will be examined hereafter. It is sprinkled with fine molecular granulations, which are more abundant near the centre than at the surface of the bulb. This amorphous matter is clearer and more transparent in animals recently killed than in those which have reached or passed the period of cadaveric rigidity. Like various species of anatomic elements, and solid or semi-solid amorphous substances, this suffers after death a sort of coagulation, which renders it finely granulated at some points where it was not so previously.

It enters into the constitution of the bulb of the true embryo-plastic nuclei, but they are found especially near its base, and at the place of its continuity with the follicular wall.

Subsequently to the appearance of the vessels, which will be considered later, a certain number of these nuclei become the centre around which originate the fibro-plastic bodies which are found with the preceding elements, in the heart of the bulb-tissue from about the fifth month of the inter-uterine life in man, and which at a later period reach the condition of laminated fibres, properly so called.

These fusiform or star-like fibro-plastic bodies are quite rare; they are met particularly near the adherent base of the bulb at the place of its continuity with the follicular wall, (pl. v, fig. 1, *e.*) The generation of these fibro-plastic bodies is effected in consequence of a series of phenomena of evolution which have the embryo-plastic nucleus for their centre.

A prolongation originates on two opposing points of the nucleus; this prolongation has a quite clear outline, but is pale and loose in texture; it is cone-shaped, the base corresponding to the nucleus which it surrounds, and the tapering extremity follows a rectilinear direction, when the amorphous matter around it is abundant and the nuclei rare; and on the contrary, takes a sinuous or irregular direction when the nuclei are pressed against each other. The nucleus comprised in this way between two conical prolongations becomes fusiform, (fusiform fibro-plastic bodies.) It is merely necessary to remark that these prolongations are not formed at the expense of the substance of the nucleus, for they are produced around the latter as a centre of generation. In some elements it originates upon the different points of the circumference of the nucleus, and this is soon surrounded with more or less numerous rays, (star-like fibro-plastic bodies,) which ramify and anastomose reciprocally. They thus form at the points where they exist, and when their evolution into fibres is completed, the net-work or woof of laminated fibres of the pulp, in the meshes of which the elements of the organ are mingled.

When the fibro-plastic bodies have reached the condition of laminated fibres in consequence of the phases of their development, their nucleus atrophies and disappears, whereas the new nuclei undergo the same evolution at the heart of the organ.*

A fact worthy of remark in the study of the texture of the bulb in subjects of different species but of corresponding ages, is, as has been mentioned, the complete identity in the anatomic composition of that organ among vertebrated animals, and consequently the analogy in the appearance of the tissue under the microscope, whatever the differences of form and size may otherwise be. There is especially the same mode in the distribution of the nuclei in the amorphous matter, the same manner in the arrangement and configuration of the fibro-plastic bodies, situated in the neighborhood of the base of the bulb near the point of continuity with the follicular wall. In this latter point, it is proved that the tissue is always more transparent than in the rest of the organ, and the fibro-plastic, star-like bodies can be more readily found there, plunged in a transparent amorphous matter, which is less granulated than in the other parts. Finally, the tissue of the organ is much more transparent on the free edge of the bulb than elsewhere, because the amorphous matter predominates there over the nuclei, (pl. v., fig. 3, *a*.) The only particularities between the different groups of mammifers which are worthy of notice are, that the tissue sometimes shows great transparency, and that the nuclei as well as the amorphous matter are very pale, (ruminants;) at other times the amorphous matter is more granulated, the nuclei and fusiform bodies darker, (pachyderms;) or else the star-like or fusiform fibro-plastic bodies are more numerous than the nuclei near the adherent base of the bulb, (man and the carnivora.) But the general characters of texture are so decided that it is always possible to recognize the bulb by its special constitution, in a preparation combining all the component parts of a follicle.

AMORPHOUS MATTER AND SURFACE OF THE BULB OF THE FŒTUS.—The transparent amorphous matter interposed between the nuclei extends beyond them over the whole surface of the bulb, nearly to its place of adherence to the wall, and is from one to two hundredths of a millimetre in thickness. It thus protrudes, like a relatively thick varnish, beyond the whole portion of the bulb, essentially formed of nuclei and of finely-granulated amorphous substance, (pl. v., fig. 1, *b*.) It is pale, very transparent, and destitute of nuclei and molecular granulations, as has already been pointed out, throughout all that portion which thus extends beyond the fundamental tissue of the bulb. The cells of the dentine originate in the depth of this bed, a little before the vascularization of the bulb for the follicles of the first dentition, and a little after that vascularization for those of the second dentition; so that it is only so disposed so long as these cells have not appeared, or in those parts only where they have not yet originated.

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* These are the fibro-plastic, fusiform, star like bodies called by Purkinje and Raschkow (1835) "*angular granules united by very loose threads of cellular tissue.*" It is the same arrangement spoken of by Kölliker, Lent, and Hannover, under the name of the *star-like cells* of the dental pulp.

It has already been remarked that the surface of that portion of amorphous matter is more dense than the subjacent portion, and crumples easily in the processes of the preparation, forming very thin and elegant folds, which spread from the edges or apex of the bulb toward the middle of its surface.* There is a continuity of substance between this superficial bed and the subjacent amorphous matter. Maceration in water sometimes separates these two parts; it is then possible to see it under the microscope, detached from the rest of the organ and floating in the liquid of preparation in very delicate membraniform strips; a result arising solely from the difference in the density of the two parts, and their unequal resistance to the method of preparation.

When the tissue of the bulb is torn, the superficial bed is detached from the subjacent part in extremely transparent strips, which have no granulations or striæ, and are so thin that the thickness cannot be measured by two lines. It ceases where the transparent amorphous bed, mentioned above, ends, that is to say, near the junction of the base of the bulb with the wall. When the cells of the dentine originate and form a range on the surface of the bulb, in the amorphous matter which they supersede, there is still seen extended above them that denser superficial portion, which can be detached in strips, and which continues until the time when the cells change into the condition of ivory. At that period it disappears, by gradual atrophy, from the centre to the periphery, that is to say, starting from the summit of each of the hollow cones or caps of dentine which have appeared on the bulb-projections.

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* This is the bed which, since Raschkow, has received the name of *membrana præformativa*, from an idea adopted by many authors, but which has since been recognized to be false, viz., that the ivory proceeds from it. (Raschkow, *Maletemata circa mammalium dentium evolutionem.* Vratislaviæ, 1835, 4to., p. 5.) Todd and Bowman have called it *the transparent homogeneous membrane forming the surface of the dental pulp.* (*Physiological Anatomy*, *London*, 1847, 8vo, p. 176.) They are wrong in considering it as a remnant of the reflexion of the epithelium of the sack, or follicle, modified in its structure. Markusen is also incorrect in asserting that the *membrana præformativa* is nothing other than the part of the bulb which is first changed into bone. (*Sur le développement des dents des mammifères. Bulletin de l'Académie Impériale de Saint-Petersbourg*, 1850, 8vo., vol. viii. p. 314.) Hannover is not more correct in considering it as the most external bed of the cells of the dentine. (*Ueber die Entwickelung und ben Bau des Saugethierzahns. Verhandlungen der Kaiserlichen Leopold-Carolinischen Akademie der Naturforscher.* Breslau, 1856, 4to., vol. xxv. p. 12.)

So long as the dentine is not yet formed, the free surface of the bulb exhibits an edge which is clear and well delineated, although very transparent and very pale. This disposition is owing to the nature of the superficial bed of amorphous matter, which will be examined hereafter.

CHANGES WHICH OCCUR WITH AGE IN THE TEXTURE OF THE BULB.—It has been stated above, that in the first dentition, it is some days after the appearance of the cells of the dentine at the summit of the bulbs that the vessels are developed in the depth of the latter; and that, on the contrary, this occurs some time before that period in the bulbs of the second dentition. The nerves show themselves in the bulb shortly after this vascularization.

At the same time that the preceding phenomena are accomplished, the production of a great number of laminated fibres occurs in the heart of the bulb. This is the result of the ulterior evolution of the fusiform and star-like fibro-plastic bodies. We will now exhibit these changes, in order not to interrupt the description of the general texture of the bulb, and we will afterward describe the disposition of the vessels and nerves.

The consistency of the bulb is gradually augmented, in consequence of the fibro-plastic bodies changing into the condition of laminated fibres, and of the incessant production of the latter.

The multiplication of the fasciculi of laminated fibres has the effect of not only increasing its resistance, but also of diminishing its transparency, which renders examination more difficult. A certain number of embryoplastic nuclei are found in the intervals of these fasciculi and in their depth. These nuclei are made more visible by the addition of a drop of acetic acid in the preparation. The amorphous matter, in the midst of which these elements are inclosed, is grayish and finely granulated, and of a very much more considerable consistency in aged subjects than in the young, a circumstance which concurs to give the bulb a resistance which increases during the course of life.

The modifications of the bulb are accompanied by a gradual diminution in the breadth and thickness of the organ, at once absolute and relative, the organ elongating considerably in proportion to the development of the roots below the dental crown. This radicular portion of the bulb is slender, becoming more and more so with age, and yet it is hard to break, being more tenacious and resistant than the part which fills the cavity of the crown; for the texture of this organ exhibits many particularities in relation to its form. It follows, from these changes, that the bulb of the uniradicular teeth is club-shaped, the contracted portion more or less long, and thinner in proportion to the advanced age of the subject. In the multicuspids the coronal part is elongated at its base in as many contracted portions as there are roots.

These slender or radicular prolongations owe their resistance to the fact that they are formed entirely of laminated fibres, united into fasciculi or parallel sheets, surrounding the vessels and nervous tubes, which are also arranged in close bundles. Acetic acid reveals some embryo-plastic nuclei in these fasciculi, or sheets of laminated fibres. They are accompanied by a little finely-granulated, transparent, amorphous substance, which in some sort imbeds them; but no ovoid nuclei proper to the bulb-tissue can be found in this amorphous matter at this level. The laminated fibres are fine, and disposed parallelly to each other, rectilinear or a little undulated; thus the tissue of the bulb is easily torn lengthwise, but not so readily across.

Following these fibres in the swollen or coronal part of the bulb, we find them separating from each other in the form of loose fasciculi or sheets, crossing each other. At the same time there is a larger quantity of amorphous matter than in the radicular portion of the bulb, a fact which coincides with the greater softness of that coronal part.

This amorphous matter is a little firmer than in the fœtus; and, as we have stated, it is a little more granular and less transparent. It extends some hundredths of a millimetre beyond the central part occupied by the fibres, and forms the superficial portion of the bulb; but the loops of the capillary vessels reach as far as its surface, even when the evolution of each tooth is completed. At this period, also, this substance is in direct contact with the lower face of the ivory; while, as long as the root has not reached its full length, a range of the cells of the dentine is found between the substance of the bulb and that of the ivory. However, the superficial part of this amorphous matter is more dense than the subjacent portion in the completely developed teeth of the infant, as well as in those of the adult; it becomes detached in thin, transparent, membraniform strips, analogous to those which are separated from the surface of the bulb before the appearance of the dentinal cells, and have been called the *membrana præformativa*. These strips detach themselves less readily, and over a less extent, on the bulbs of developed teeth, because the subjacent matter is more firm. Moreover, their substance is finely granular, and, finally, it draws away, in places, some of the peculiar nuclei of the substance of the bulb.

The amorphous matter of which we are about to speak is indeed sprinkled with these nuclei, as during the fœtal condition of the bulb, and they are found at two or three thousandths of a millimetre from the surface even of the coronal portion of the bulb, that is to say, almost in contact with the ivory. These nuclei are more rare and more distant from each other than during the fœtal period; they are more numerous near the surface of the bulb than in its depth, where they become rarer and rarer, while, on the contrary, the fibres are more abundant. These nuclei resemble those of the fœtus, except that they are a little more elongated. It is also to be remarked that the tissue of the coronal portion of the bulb is softer at the surface, where they abound, than in the lower part where the fibres predominate.

b. *Vessels of the Bulb.*

Near the period when the bulb reaches a breadth of about one-half or three-quarters of a millimetre, it begins to become vascular. We see at first one or two vascular loops extending into the thickness of the base; but in bulbs of only a millimetre or a little more, many other loops can be seen detaching themselves from these and advancing toward the surface of the organ. They do not reach it, however; they do not penetrate even as far as the superficial bed of the amorphous matter which is without nuclei, and which forms the surface of the bulb. So long as the coronal portion of the latter is not covered with ivory, the extremities of the loops remain at about three or four hundredths of a millimetre from the surface, (pl. v., fig. 3.)

A small artery, from one to two-tenths of a millimetre in diameter, and reaching but little beyond this volume at any age, followed by one or two small corresponding veins, show themselves at the base of the bulb or of its radicular part, according to the age. In proportion as they reach the narrower part of the dental germ, near its coronal portion, the vessels subdivide a great many times at very short intervals. When the bulbs are still small, each afferent capillary only curves loop-like near the surface of the organ, and returns directly to the veinous trunk as an afferent capillary, (pl. v., fig. 3.)

In the whole of the divisions and loops, these vascular arrangements, while very simple, are extremely elegant. Many of the capillaries fold back upon themselves, in the shape of the figure 8, near the loop-extremity, at the point where they change from efferents into afferents. In addition to this, they describe some flexuosities, or very close and short undulations. The distance between these capillaries is about two to four times their own diameter, and continues nearly the same during the whole existence of the bulb.

By taking follicles more and more voluminous, until the teeth are fully developed, we find that when the loops are elongated their capillaries communicate by transverse branches, which become more and more numerous, and thus divide them into polygonal meshes with rounded angles, the diameter of which is from three to four times that of the capillaries which circumscribe them. The whole is very elegant on well-injected bulbs, or, better still, on the well-congested bulbs of suffocated animals, or on certain diseased teeth which have been extracted. We have already said that in the completely developed teeth of infants and adults the loops, or rather the most exterior meshes, extend to the surface which touches the ivory, and are only separated from it by a certain thickness of bulb-substance, as before the genesis of the ivory.

Dilaceration of the tissue readily occasions the isolation of some capillaries, and permits it to be seen that their structure is the same as in the generality of the other tissues.

The association of these numerous capillaries in the woof, previously described, gives the bulbous tissue a rosy, gray color, nearly semi-transparent. This color changes to a purple red, or most intense violet, in inflamed bulbs, and, besides, we sometimes see some broken capillaries, and here and there small bloody effusions, forming a very fine picket at the surface or in the depth of the organ. In these circumstances, we can clearly establish the varicose disposition, with short intestiniform folds, of the capillaries, distended by heaped up and coherent *hematies*, without any trace of serum between them, as is generally seen in other inflamed tissues. It is difficult by description to give any idea of the elegance of this vascularity, and the precision with which it is seen by the observer, when the examination of a sufficient number of pieces allows him to fall upon those which present the circumstances favorable to their study.

It occasionally occurs in man and in the various domestic mammals, that the bulb of a tooth is very pale; while, on the contrary, those of the neighboring teeth are congested and reddish. This is observed, particularly in those of the first dentition, where the roots have begun to be atrophied, in order that they may be soon replaced. In this case, and in exsanguinous dead animals, the tissue of the bulb is gelatiniform, semi-transparent, of a pale gray color, and very delicate in appearance. There are, in this case, only a small number of capillaries full of blood.

c. *Nerves of the Bulb.*

In man there are generally two fasciculi of nervous tubes in each of the radicular portions of the bulb. There are sometimes three or four, especially in the large mammifers. These fasciculi are only a little more than one-tenth of a millimetre in breadth, but often reach only half this diameter, or a little more. They are nearly rectilinear, and are removed from each other, being separated by the vessels and fibrous fasciculi of which we have spoken. They are formed by thin tubes, immediately contiguous to each other, without capillaries in their interior, and surrounded by a very thin involucrum, which holds them strongly pressed together. We can trace these fasciculi as far as the coronal part of the bulb, and observe their subdivisions; but these subdivisions are lost to sight in the thickness of the latter, the opacity of which prevents them from being followed. We can, however, observe the manner in which a certain number of these tubes terminate in the projections which surmount the coronal part of the bulb, and which bury themselves in each of the corresponding projections of the free edge or triturant surface of the dental crown.

In the incisors of man, and the carnivora particularly, the coronal part of the bulb, flattened into the shape of a wedge, is surmounted by as many very delicate and elegant small, conical, transparent prolongations. They start from the free or trenchant edge of the bulb. There are two lateral ones, one at each angle, and a middle one, which is the longest. In the ruminating animals there are also larger and longer prolongations, which surmount the coronal part of the bulb of the molars; they are very transparent, and it is easy to trace one or several capillary loops and several thin tubes, slightly separated from each other. They terminate in the same manner as in man and the carnivora.

In the latter, in each of the prolongations loosened from the edge of the bulb there is a single capillary loop, at the side of which creeps a thin nervous tube. This tube sometimes occurs only in the middle prolongation, and is wanting in the others. It terminates at the distance of from three to five-hundredths of a millimetre from the extremity of the latter, while the vascular loop which it runs over reaches as far as the summit. Before it terminates, the tube becomes gradually attenuated, but without subdividing; the extremity is disposed in a blunt point, transparent and difficult to see, because the fatty contents, which strongly refract the light, cease a little before the termination of the wall itself. This terminal extremity of the nervous tubes must always be looked for near the vascular loop.

(To be continued.)

ON TEETHING.

WRITTEN IN THE YEAR 1777, BY DR. COOK. COPIED BY DR. C. BREWSTER.

Dr. Arbuthnot observes "that above a tenth part of infants die of teething, by symptoms proceeding from the irritation of the tender, nervous parts of the jaws, occasioning inflammations, fevers, convulsions, gangrenes, etc."

The symptoms are, in great measure, owing to the great delicacy and exquisite sensibility of the nervous system at this time of life, which is but too often increased by an effeminate education; when it happens that children who are delicately brought up always suffer most in teething, and often are carried off by convulsive disorders. Melancholy it is to think that, among all the disorders that afflict the little innocents, there are none that generate such grievous symptoms as difficult dentition; and I am sorry so little material aid can be rendered by our medical art to prevent or remove that great sorrow the parents suffer, and the pain their infants endure, in so difficult breeding of their teeth; as what is within must needs come out.

Children about the time of cutting their teeth slaver much, and have generally a looseness. When the teething is difficult, especially when the dog-teeth begin to force their way, the babe has startings in his sleep, swelling of the gums, inquietude, watchings, gripes, green stools, the thrush, fever, difficult breathing, shrieks and cries, and lastly, convulsions seize it.

Wherefore difficult teething is, in all respects, to be looked upon and treated as an inflammatory disease. If the belly be bound, it should be loosened, either by emollient clysters or gentle purgatives, as manna, magnesia, rhubarb, or senna tea. The food should be light, and in small quantity; the drink plentiful, but weak and diluting, as infusion of balm or lime-tree flowers, to which add a third or fourth part of milk.

All the relief that we can give such early sufferers is to attend to every symptom that may arise, which are commonly cured, or alleviated at least, by the very same method, viz., by absorbent and temperating medicines, and then generally cathartics, that do not enter to disturb the blood; as half a scruple or more of magnesia or crude tartar at a time, reduced first to a fine powder, and exhibited in a little solutive syrup.

If the fever be high, bleeding will be necessary; though this, as before observed, should always be sparingly performed. It is an evacuation which infants bear the worst of any; purging, vomiting, or sweating agree much better with them, and are generally more beneficial. Dr. Harris, however, observes that, when an inflammation appears, the physician will labor in vain if the cure be not begun with applying a leech under each ear. If convulsions happen, apply a blister plaster between the shoulders, or behind each ear, as the last resort.

Sydenham recommends three or four drops of spirits of hartshorn, but a larger dose is better. It may be given from five drops to fifteen or twenty, according to the age of the infant; and when costiveness forbids it not, three or four drops, at most, of laudanum may be added now and then, to abate the pain and gain a truce for a short time.

Their slabbering and looseness are no bad signs, but are salutary, as they would become worse without them, because the nerves sent to the stomach and intestines proceed from a coalition of the intercostal and par vagum, or eighth pair, which have a communication with the fifth, a branch of which is carried to the teeth and jaws; whence also is the spasm of the genus nervosum, which follow too sharp purges and indiscreet use of mercurials.

In Scotland, it is common, when children are cutting their teeth, to lay on a small Burgundy pitch plaster between their shoulders; which generally eases the tickling cough that attends teething, and is by no means a useless application; for, as trifling to some it may appear, when the teeth are bred with difficulty it ought to be kept on during the whole time of teething. It may be enlarged as occasion requires, and ought to be renewed at least once a fortnight.

About the sixth or seventh month, the teeth generally begin to make their appearance—first the fore-teeth, next the two dog-teeth, and lastly the grinders. About the seventh year there comes a new set, and about the twentieth the two grinders, called the teeth of wisdom.

Think not I tell this to nurses; but to persons of learning, who probably may chance to read this useful undertaking; a work surely much needed, and never before, that I know of, this *ex professo* undertaken; wherefore I hope it will be the more acceptable.

Several things have been recommended for rubbing the gums; as oils, mucilages, hare's brains, or cream. Anoint them often with sweet-oil, or with oil of sweet almonds, with a feather; or rub their gums with a mixture of either of these oils and syrup of violets or wild poppies, lightly acidulated with a drop or two of spirits of vitriol, to cool the parts and abate the pain. But from these much is not to be expected; but ever so little relief is better than none. To rub the gums gently with a little fine honey three or four times a day is as good as anything; but if the pain becomes intolerable, it may be appeased for a season with giving gentle opiates, as a teaspoonful of jalap, or camphor, or solution of assafœtida, or, last of all, with two or three drops of liquid laudanum, prepared with plain water, giving, two or three times a day, five or eight drops of spirits of hartshorn in a small spoonful of soft water.

Children at the time of teething are generally disposed to chew whatever they get into their hands. For this reason, they should never be without somewhat that will yield to the pressure of their gums; as a crust of bread, a wax candle, or a bit of licorice-root, and such like; which shows the impropriety of corals, and such hard and impenetrable bodies

But I should think lancing the gums crossways, by any sharp instrument that can with safety be introduced into their mouths. And I hope, from this hint, an ingenious surgical instrument maker will soon contrive one fit for that operation; for as to the use of the nurse's nail, or even the edge of a sixpenny piece, I have no good liking, as they, by being blunt rather bruise than cut asunder the distended gum. I have been the longer on this article as the case is so common, so very painful, and often so very mortal.

LITTLE THINGS.

BY J. S. LATIMER, D.D.S.

FOIL IS RESTORED to its soft and adhesive condition by proper annealing.

Often the pellets left over to another day, or the gold otherwise exposed, loses its adhesiveness from some cause not well understood. I put them on a piece of sheet metal and place them in a stove oven for a few minutes, subjecting them to a good bread-baking heat.

I have been assured by those experienced in the manufacture of foil, that gold annealed over an alcohol flame is adhesive and *hard,* while that annealed in an oven or over charcoal is soft and "kid-like."

CLEANING BURS AND FILES is easily and conveniently accomplished by the application of a stiff tooth-brush, after they have been wet.

No file or bur should go to its place in the case without being clean; for, not only does the instrument cut faster, when clean, but common decency requires cleanliness on our part, and the danger of inoculating one patient with the diseases of another demands a proper attention to this matter.

LEAD AND ZINC do not adhere very strongly to ladles that have been coated on their inner surfaces with whiting.

SHELLAC GUM is sometimes advantageously used for holding teeth in situ during the process of dressing the linings. A tooth-brush handle or a small piece of wood has a notch cut in it, near one end, large enough to receive the tooth. This notch is then filled with the gum, which, on being melted with a slight jet from the blow-pipe, receives and retains the tooth well enough to admit of its being nicely finished.

PIVOT WOOD is said to be improved by soaking in creosote.

A SWISS GENTLEMAN consulted me some time in the winter of 1859–60, concerning a discharge of serous fluid from around the neck of one of his superior canines. Finding his gums much diseased, and his general health considerably affected by his sedentary habits, I removed two or three local irritants and sent him away with a tonic prescription and a stimulating and astringent lotion, as I could detect no disease in the canine itself.

In a few weeks he called again. The gums and general health were much improved, but the discharge still continued. After a pretty thorough examination, I concluded that a dens sapientia of the same side was responsible for the discharge, and removed it accordingly, after which no further trouble was experienced in that direction. I mention this case, not on account of its rarity, but to show the importance of deliberate and thorough investigation.

THE BEST ABSORBENT of saliva I have ever employed, bibulous paper not excepted, is a soft, thin, cotton fabric, like coarse lawn or nansook muslin. It is deprived of oleaginous matter by thorough washing. On many accounts it is preferable to paper, cotton, flax, or spunk.

PLATE-SHEARS WHICH CURL THE PLATE are faulty in construction. Where the rivet is on a line with the cutting edges, no twisting or curling is noticed.

THE PROPER ADJUSTMENT OF CLASPS is not always easy. By the following plan I have had better success than by any other. The plate being properly adapted to the arch and the clasps to the teeth, I place them in their proper positions in the mouth. A piece of double tin, an inch in width and bent somewhat in the shape of a letter U, so that it approximates to the arch of the mouth between the teeth to be clasped, and having its ends bent at something more than a right angle, is covered with a thick batter of plaster on its convex surface and pressed up so as to embrace both the teeth to be clasped, the clasps themselves, and the plate. If the plaster has been properly manipulated, the whole may be removed together, in a minute or two, when a little more plaster is added if necessary; the water is driven off and the clasps tacked by soldering at a single point. (I attach my clasps to the plate by standards.) The plate should then again be tried in the mouth, and if the adjustment is correct the soldering may be completed.

A FUSIBLE ALLOY made of lead, 15 oz.; bismuth, 24 oz.; tin, 9 oz.; melts at about 200° F., and, if poured at the moment the melting is completed, will not "blow" even in a wet plaster impression. Dies thus made are sometimes useful for correcting inaccuracies caused by the shrinkage of zinc; for which purpose the same lead counter is employed while the zinc die is replaced by the fusible alloy.

It is convenient in these cases to make the chamber with a movable copper pattern, instead of having the chamber formed by the zinc and lead alone.

NEW YORK, 1861.

MAL-DEVELOPMENT OF THE TEETH.

BY G. J. STIVERS.

SOME time since, a young lady, aged about eighteen years, called at my office and wanted to know if I could extract two teeth for her. I asked her if they had been aching. She remarked that they had, and were aching very much. On taking her seat in the operating chair, I found a case (to me) of unusual malformation and displacement of the teeth in the inferior maxillary. The four incisors were in their proper place, but where the cuspidati should have been, was what appeared to be the first bicuspid, encircled by three extra teeth, placed as follows: a tooth having the appearance of an incisor was placed on the lingual surface, ranging in an angle of about thirty degrees in direction of the soft palate; on the anterior bucco-approximal angle was another, also having the appearance of an incisor—this was growing at right angles from its point of emergence toward the lower lip; on the buccal surface was another tooth having the appearance of a cuspidatus, which was growing in the proper direction, except that it was entirely out of the arch; on the posterior approximal surface was another, having the appearance of the first molar. This tooth was placed in the proper line, but very much decayed. I extracted this tooth first. I found it to be a molar with two well-developed fangs, with the exception that the fang next to the circle described was about three-fourths absorbed. My first impression on seeing this, was that the fang had broken off; but on examining the parts I found a new tooth emerging, having the appearance of the first or second bicuspid. I next extracted the tooth described as growing on the anterior bucco-approximal angle, and found the fang also about three-fourths absorbed; finding the bicuspid described as growing within this circle very loose, I extracted it, and found the fang in the same condition as the two former. I will say here, that it was my intention, when I began, to leave this tooth, as it looked as perfect as any tooth in her mouth. I next extracted the tooth placed on the lingual surface, and found the fang perfect and exceedingly long and slender. It was now my intention to leave the cuspidatus, thinking it would grow within the proper line, but, on examination, I found another new tooth coming (evidently the first bicuspid) immediately under the bicuspid described above, and consequently it was exactly where I expected the cuspidatus to form to ; hence it was necessary to extract the cuspidatus, which I did. This applies to both sides, as both were affected the same.

This young lady assured me she had shed all her teeth at the proper time. These extra teeth had come within the last four years. I requested her to call again at the expiration of a month. She did so. I found that the new teeth spoken of at the time of extraction were fully developed, and proved to be bicuspids. She is now enjoying a full and regular set of teeth minus the cuspidati. She has not suffered with the toothache since the operation. The teeth in the superior maxillary were perfect and regular.

Shelbyville, Ky., May 20, 1861.

AMALGAM.

BY C. B.

In looking over the last number of the Dental Cosmos, I came across a discussion on the amalgam question, a subject which I considered had been discussed to death a hundred times over; but this one attracted my attention more particularly on account of what, I thought, the just and reasonable manner in which it was handled.

I have, perhaps, seen as much amalgam filling as most dentists, with an equal amount of practice, being number four on the list of dentists who have at one time or another had possession of this business, which was established somewhere about the year 1830, I believe. All of my predecessors have been in the habit of using amalgam, and I am constantly witnessing its durability. I will say no more, however, on this point, for I do not want an argument with anybody; as we have had enough of that. I see that the different speakers all advocate the use of "Townsend's Cement," which, I have no doubt, owes its celebrity chiefly to the respectable standing of its inventor; for when it first came out I tried it, and was rather disappointed at the results. I attributed the failure at that time, and up till very lately, to the large amount of tin it contained, and knowing its great affinity for mercury, I concluded that it absorbed too large an amount of the latter, more than it could retain for any length of time; but some experiments that I have recently made have shown me that I have not yet found out the true cause of my failure.

The following is the result of my experiments:—

I found that 3 grains of pure silver absorbed *and retained* 3 grains of hg.; I mean what no pressure that I could exert between the thumb and palm of the hand could eject.

Three grains of pure tin also absorbed and retained 3 grains of hg.

But what rather astonished me, was that 3 grains of pure *precipitated* silver should absorb over 6 grains, more than double its weight of mercury!—while 3 grains of Townsend's silver and tin only absorbs $1\frac{1}{2}$ grains of hg., or half its weight.

Thus we see that, taking pure tin and silver separately, they each absorb their own weight of hg., but when the two are combined, as in "Townsend's Cement," they only absorb half their weight. Then, again, the fine division of the base, such as is the case in using precipitated silver, does not seem to be at all desirable; for I cannot attribute the large amount of hg. required to amalgamate precipitated silver to any reason than its minute divisibility.

Under these circumstances, I shall be inclined to think more favorably of "Townsend's Cement," though I have no doubt that the addition of a little more silver would tend to make it harder and more durable.

MONTREAL, C. E., June, 1861.

EARLY DEPOSIT OF OSTEO-DENTINE.

BY EDWARD N. BAILEY, D.D.S.

MISS S., about seventeen years of age, of a sanguine and highly nervous temperament, called in March to have some teeth filled. They were very badly decayed, with the prospect of several exposed nerves; excavated carefully, and, with the aid of chloride of zinc and creosote, prepared and filled the two superior frontals, left lateral and canine, on both approximal surfaces, being surprised at the extent of the caries without involving the nerves. Next opened the superior left first bicuspid anterior approximal surface and crown to the posterior indentation, removed the discolored dentine with caution, (having previously treated with chloride of zinc and creosote,) until I had the base of the cavity exposed clearly to view; perceived near the centre a small opening with a raised white ring around it, and beyond this, dark bone to the walls at the sides. Introduced the point of a fine probe into the opening, expecting to touch the nerve; no sensation of pain; extended it farther up, about $\frac{1}{16}$ of an inch, and it was stopped by firm resistance; removed the dark bone around the white ring, leaving it a tube standing firm and hard in the center of the base of the cavity. Not finding the nerve exposed, filled it without any attending pain. The opposite right first superior bicuspid still more decayed, and broken down from the posterior approximal surface; removed the discolored bone and found a similar projection and opening in the centre, but the nerve was exposed at two points corresponding to the cusps. Treated it; and on cutting across from the exposed points and behind the projection into the nerve cavity, found it to be very small, without sufficient opening into the roots to pass a fine nerve broach, the carbuncle of osteo-dentine adhering firmly to the anterior wall of the cavity.

DISCOLORATION OF DENTINE. *

BY T. B. WELCH.

I HAVE a front tooth to treat, which, years ago, was filled with gold; its nerve having previously died. It has been dark colored nearly ever since it was filled. It is now stained throughout the entire dentine. What is my best course to restore it to its natural color? Let me hear through your next DENTAL COSMOS.

WINONA, MINNESOTA.

P.S.—Can any of our readers answer W. correctly? J. D. W.

(Continued on page 662)

EDITORIAL.

INQUISITIVE PATIENTS.

DOUBTLESS every dentist who has practiced for any length of time, has learned what it is to be annoyed by a continued shower of useless and unmeaning questions by some of his patients. Many ask questions which we regard as only the result of *nervousness;* such we consider as inseparably connected with the nature of the patients, as the diseases of their teeth, and treat them accordingly. But there is another class, who keep up a *run* of questions about what we are doing or about to do to their teeth, which there can be no excuse for; the questions have no point, nor can there be any point made, nor useful or in any way reasonable answers given to them. They only retard the progress of the operations going on, as well as in many cases interfere with their proper performance. We have no objections to answer all reasonable questions, as well as many unreasonable ones, for the sake of not appearing rude or nervous ourselves;

* The following questions & answers are found in Vol. III, 1861, of the Cosmos. What farther light have we now? - Ed. Items.

but when the same things are asked over and over again, when our attention is closely and carefully engaged in a delicate case, or a number of cases are passing through our mind, it is a nuisance. We do not wish to be understood that we object to patient's talking, as we do not expect or desire to conduct our operations entirely in dull silence. We are as fond, perhaps, of *small talk* as any one else; it often makes things go on more smoothly, and sometimes is useful in breaking the monotony of an hour, and lightens the burden of an operation to the patient as well as to ourselves. We always make it a point to enlighten our patients as much as we can as regards what we are doing or intend to do, so that they may understand us, as it is never pleasant to operate for any one who is ignorant of all that is going on. But a patient who will commence the asking of questions as soon as he is seated in the chair, and sometimes even before it, with an air as if everything in the future of the operation shall be foretold, is absurd. It is impossible for a dentist to answer one in ten of the questions intelligently, simply because he cannot know about a case himself until it is completed. Some will ask a dozen of times if a nerve is exposed, before a cavity is half prepared. It would be much more sensible to ask questions on the passing events of the day, than about the details of operations on their teeth. It is certainly true that the propensity to ask questions runs in families, as if it were constitutional rather than the result of bad education. Many questions by such people we never answer, unless they hit something that might be useful to them.

We were informed, a year since, that some young ladies in a family complained that we were not very "satisfactory," as we did not answer questions when asked; so we thought we would try a little experiment, to see what the result might be. One of the number had an appointment some time ago; we placed a slip of paper among our instruments, and a pencil, to note the time of operating and number of questions. There were two small crown cavities to fill; we kept the mouth of the patient open as much as we could while the operations were going on, to prevent as much as possible question asking, noting at every opportunity the number of questions asked. The operations lasted thirty minutes, and there were *twenty six questions asked!* We kept as quiet as we could to prevent any excitement or stimulous to asking questions, and answered all in the shortest way. A short time after the above, another young lady of the family had an engagement, when we tried the same experiment, and in fourteen minutes there were eighteen questions asked. On a second visit by the same, there were fifteen questions in sixteen minutes. The nature of the inquiries could amount to nothing, as they were of the following order: "Is the tooth much decayed?" "is it to the nerve?" "is it as much decayed as the other one?" "will you finish it to-day?" "are there any others decayed?" etc. etc.

J. D. W

"PRACTICE MAKES PERFECT."

There is an old and time-honored adage which says that "Practice makes perfect." Although, like many other popular expressions, there are exceptions to this rule, it cannot be questioned that *constant* and well-directed efforts on the part of one possessing but ordinary talents will bring him nearer perfection than it will the irregular and spasmodic exertions of one supposed to enjoy superior natural endowments for a given pursuit. As a further illustration of this, it was an oft-repeated remark of Hogarth's, that genius and industry were one; in other words, with him these terms were synonymous. While we can have no better refutation of the inaccuracy of this assertion than that presented in the fact that although there have been many painters, there has been but one Hogarth, it must also be admitted that genius without labor can accomplish nothing, and that very often those who have been looked upon by their compeers as very ordinary persons, by constant and unremitting labor have succeeded where the so-called genius has failed.

Applying these remarks to our own specialty, we would say to those just entering upon the practice of the profession, who are animated by a commendable desire to excel as operators, that, after having made themselves acquainted with every known mode of operating, they should invariably make each operation as near perfect as possible; performing an operation for which the compensation to be received can in nowise be regarded as an equivalent for the services rendered, with as much care as one for which the largest fees will be obtained.

By the strict observation of such a rule alone can the confidence of patients be secured, and anything approximating perfection be attained.

The young surgeon desirous of excelling certainly would never think of slighting his operations on account of inadequate compensation, and the same feeling should animate the young dentist. In either case, the adoption of any other course than that which is prompted by a high sense of duty, must prove disastrous to the operator in two ways: first, by performing operations in a careless manner, the habit of manipulating in a slovenly way will be acquired, and make its impress on all occasions; second, imperfect operations sooner or later will be discovered, and the patients who suffer by them, in place of using their influence in favor of the operator, very naturally will do all they can against him. When it is remembered that the very best efforts on the part of those who are eminently qualified are not always successful, it will be readily conceded that one should not of their own free will do less than they are able. Failure under such circumstances is at least not attended by the reproaches of conscience, and, as a general thing, the patient will not attribute it to want of skill or integrity, but to those general influences which sometimes render the best-directed efforts unavailing.

In conclusion, it should be an invariable rule with the operator, except in case of sickness, never to allow a day to pass by without introducing at least one filling, whether patients come or not. It is preferable, of course, to operate in the mouth; but if that chance is not afforded, it is far better to place a tooth in a small vice, and operate upon it in that way, than to lose the opportunity that will be afforded by such means to educate the hand and to acquire and maintain that delicacy of manipulation which is so essential in the operative dentist.

As an evidence of the advantage likely to accrue to one who will adopt such a course, we remember, when a student of medicine, that a favorite teacher (Professor Mütter) used to tell of a surgeon in Paris who was consulted in every case where there was a difficulty in diagnosing the presence or absence of a stone in the bladder, and his *tactus eruditus* was so much relied upon, that a decided expression of opinion from him settled the question. It is stated that he acquired this remarkable delicacy of touch by carrying about in his coattail pockets a number of stones, and as he walked along the streets he would constantly strike them with a sound similar to that used in exploring the bladder.

In these remarks, if there is one thing we desire to impress upon the mind of the reader, young or old, more than another, it is that excellence in any undertaking, whether great or small, is only to be acquired by constant, unremitting application. J. H. M'Q.

REVIEW OF DENTAL LITERATURE AND ART.

BY J. H. M'QUILLEN, D.D.S.

"TO THE DENTAL PROFESSION AND THOSE CONTEMPLATING THE PRACTICE OF DENTISTRY.—Mr. ———, from ———, graduate of the ——— College of Dental Surgery, United States of America, gives instructions to those desiring it in stopping teeth with gold, as practiced by the American dentists. As this branch of the profession is becoming generally known and more highly appreciated in Great Britain, the object of the advertiser is to impart, in a few practical lessons, such information as shall enable the intended practitioner to proceed with confidence in this, the highest branch of the dental art. Apply, for terms, etc., ———, where also may be seen specimens of stopping."

The paragraph above, which we found in the advertising columns of the *Dental Review, London*, is presented as a specimen of the modest assurance that characterizes some of our fraternity when they get abroad.

As it is a rule which we have never swerved from, to deal with principles and not men, in any comments published in this department, the name of the advertiser, who we never heard of before, has been suppressed. Knowing nothing of his qualifications, an experience of years as a practitioner and teacher induces us, however, to question the ability of any man "to impart in a *few practical lessons* such information as shall enable the intended practitioner to proceed with *confidence* in this, the highest branch of the dental art." True skill and reliable confidence can only be secured after years of experience, and not always then.

It is singular, but no less true, that, because a few American dentists who possessed manipulative skill of an order which would have secured for them a high professional reputation and competency anywhere, either at home or abroad, by a combination of fortuitous circumstances, on going to Europe, struck upon a vein which has enabled them to acquire princely fortunes, and at the same time give a marked *prestige* to American dentistry, it has been inferred that the entire dental profession all through Europe is in a most benighted condition, and that it would be an act of mercy and charity to send dental missionaries from our country on an errand of salvation to these benighted creatures, and shed upon them the bright effulgence of our superior attainments in theory and practice.

Now with all due respect to the opinions, and with no disposition to doubt the veracity, however much we may question the judgment of those members of our profession who have made flying visits of a month's duration to Europe, called upon half a dozen dentists in that time, and returned home with the most deplorable accounts of the ignorance and incompetency of the dental profession in the Old World, we have invariably received such statements "*cum grano salis.*" There was a time, and that at no remote period, when there was great need for reformation, not only in Europe, but also in America, and there is still room for improvement in both. It must not be supposed, however, that the uprising which has been attended by such remarkable results in our own country has found no counterpart in the Old World. On the contrary, everything indicates in the strongest manner possible that a decided and radical revolution has taken place there.

The organization of societies, the establishment of periodicals, the foundation of schools, and the hearty and liberal support that each and all of these receive in England, demonstrate this beyond a question of doubt.

Again, it must be remembered that up to the last twenty-five years we were indebted to the Old World for our literature, as prior to that time little or nothing had been accomplished in that direction by us.

In point of practice but few opportunities are afforded us of examining the operations of European dentists, but we have met with fellow-practitioners, in whose judgment and veracity we have every confidence, who stated that they had seen work of the highest order from the hands of English operators. Added to this, we remember that years ago (when those who are most actively engaged in the practices of dentistry now were children) there was a gentleman by the name of Wate practicing the profession in London, whose eminent services were justly appreciated at home and abroad, and upon whose operations no less a judge than Dr. Eleazor Parmly has passed the highest encomiums. And years before that, (in 1802,) Dr. Hudson left his native home, (Ireland,) where he had been educated under an uncle for the profession, came to this country, located in Philadelphia, and established a reputation as a skillful and scientific practitioner which very few have equaled, and none surpassed; and although he has been dead nearly thirty years, many of his operations still remain as monuments of his skill, and fit models for imitation by the present generation of practitioners. At an earlier period than that already referred to, (in 1782,) Dr. James Gardette (who was born and educated in France) established himself in Philadelphia, and met with the most gratifying success. He has been described by Dr. Elisha Townsend as "a practitioner of high standing in his profession, of acknowledged skill, combined with great scientific attainments." Taking all these things into consideration, we cannot but believe that operations of the highest order have long been, and are still performed by our professional brethren in the Old World.

In what has been said we would not wish to be understood as denying or controverting the fact that much of the present advancement of dentistry in Europe has been stimulated by the rapid strides that the profession has made in our country. This is fully admitted by our European brethren in a manner which evinces the kindest and warmest feeling of regard and respect on their part.

ODONTOLOGICAL SOCIETY.—IT is gratifying to notice the interest evinced by the members of this association in its advancement. This is manifested not only in regular attendance at the meetings and participating in the discussions, but also in the liberal contributions made to the library and museum. On former occasions, we have given utterance to expressions of regret that there should be a division of sentiment among the dental profession of England on the subject of education, and have trusted that by the exertions of disinterested parties a reconciliation eventually would be effected, and that the Odontological Society and the College of Dentists would become united and have one common object and one common aim; for we have felt a deep and abiding interest in both parties. After watching the course of events for the last two years, studying the characters of the parties engaged in the struggle, noticing the very decided difference of opinions entertained, and the warm attachment manifested by each for their own organization, there appears but one alternative open, and that is to "agree to disagree," and, in maintaining separate associations, to emulate each other only in earnest efforts to advance the science and art of the profession.

Apparently acting upon this principle, the Odontological Society, confining its attention exclusively to such matters, has been engaged for some time past in discussing, among other interesting subjects, the plan proposed by the late Dr. Hulihen for treating exposed dental pulps, to which he gave the very singular name of Risodontrophy. Those of our readers who are familiar with the subject will remember, in the description given by the author, he asserted that by drilling into the pulp cavity below the neck of a tooth, preparatory to introducing a filling in a cavity with an exposed pulp, the necessity of destroying the pulp would be obviated, as the vitality of that organ, by this operation, could be guaranteed beyond a question of doubt.

When first proposed, the fallacy of the operation was so apparent that it was a matter of general surprise that such a singular and unphilosophical course of treatment should have emanated from such a source. Its advocates in this country were few in number, while its opponents were legion. No plan of treatment suggested of late years, perhaps, has met with a more decided and speedy overthrow than this; for, after a brief but unsuccessful struggle for existence, it fell into general disrepute, and was altogether abandoned.

We do not know whether it was continued or abandoned by its author prior to his decease. To the best of our recollection, however, it has been stated, in a communication to one of the dental journals, by a gentleman well known to the profession as an excellent writer and practitioner, (Dr. Abr. Robertson, who has practiced in Wheeling—Dr. Hulihen's home—for many years,) that a great number of teeth treated in this manner by Dr. H. had come under his notice, and, without a single exception, they were perfect failures.

This subject, so summarily dealt with in its place of nativity, was introduced to the consideration of the Odontological Society in a paper from a corresponding member residing in New South Wales, in which he advocated the propriety of performing Dr. Hulihen's operation.

It is due to the members of the society to state that, in the discussion which supervened, the possibility of preserving the vitality of the pulp by such a plan was generally questioned. Some of the members, however, advocated drilling into the pulp cavity to secure an opening for the escape of purulent matters, which, by collecting there, would eventually become a prolific cause of periodontitis and subsequent alveolar abscess. On this point we would respectfully suggest, as a far better plan, to thoroughly cleanse the pulp cavities, and then introduce a good gold filling so compact that no room will be left for morbific accumulations.

THE DENTAL REVIEW, LONDON—MARCH.

"ON THE SCOPE, TENDENCY, AND EDUCATIONAL VALUE OF THE NATURAL HISTORY SCIENCES. By T. SPENCER COBBALD, M.D., F.L.S.—SIR: I purposely design that the subject proposed for this evening's discourse should be presented to you in the form of an appeal advocating and demonstrating the necessity for a wider diffusion of the natural history sciences.

"In the earlier days of scientific pursuit, the cultivators of natural history confined themselves, for the most part, to the mere collection of cabinet curiosities, whose individual worth was estimated by comparative rarity or singularity of form, while the more important facts in regard to the relation of animal, vegetable, and mineral bodies, the one to the other, were entirely overlooked. In recent times, however, the votaries of science, by tracing out the intermutual relations and the reciprocal influences which these bodies directly or indirectly exert upon one another, have fairly realized the existence of a fundamental unity of plan pervading all created nature throughout *time* and *space.* I believe, indeed, with respect to this planet, that it is not too much to affirm, that in all epochs of the earth's history—in whatever phase its cosmical elements have appeared—the laws prevailing hitherto are the same as those in operation at the present day; while the singularly varied results which we now witness are regulated by the *degree*, *direction*, and *conditional circumstances* under which those laws are permitted to exercise their sway. To demonstrate the truth of this persuasion in its entirety is not my present concern; yet I have not hazarded this generalization without careful, prolonged, and independent reflection.

"Were it now my intention to develop the legitimacy of this hypothesis, it would be necessary, in order to give full effect to its claims, to furnish illustrations too numerous and varied for a single discourse. I will endeavor, nevertheless, to throw a ray of light on the matter.

"As far as the mere toil of observation goes, whether natural or artificial, the naturalist may be compared to an astronomer, whose investigations embrace so vast a region, that in proportion as his examinations become minute so do the limits of his study recede, appearing more and more distant and immeasurable.

"Whatever section, or segment of the circle of the known, engages his immediate attention—and the same thing holds good if we suppose him to be acquainted with all the results which the combined experience of his fellow-workers has produced—whatever department of the known, I repeat, is occupied, the regions unexplored must necessarily inclose oceans of truth forever hidden from his gaze.

"Reflecting on such a consideration as this, I can readily imagine that some such a question as the following may occur to you, and I shall suppose that you put it to me thus: 'If, as you aver, the known bears so insignificant a proportion to the unknown, might not a more extended acquaintance with those unexplored regions—assuming it possible to acquire this knowledge—produce facts or phenomena the study of which, if submitted to the ordinary inductive tests, would be sufficient to weaken or altogether overthrow your generalization?'

"To this I confidently answer, Certainly not!

"Let us, if you please, look more closely to the position of the naturalist—or say, rather, the biologist.

"For the sake of illustration, we assume that a particular Fauna or Flora, or a particular group of individualities, or, in the case of the comparative anatomist, a particular system of structures, (such as the organs of circulation,) engages for a time his exclusive attention.

"In any of these attitudes the biologist is precisely in the position of a traveler mapping out the features of an unknown continent. By careful observation, powerfully developed by artificial methods of survey, he makes himself acquainted with all the phenomena presented within the limited area of his wanderings, and, by a comparison based chiefly on analogy, deduces a series of *general propositions* or conclusions in regard to that which lies beyond his reach. Experience has shown that in this way a correct and comprehensive generalization may be established respecting the actual condition of the continent in its entirety, although, of course, the traveler's conceptions of the minor features presented by unexplored districts must necessarily remain imperfect or altogether fallacious. How is this? Simply, I argue, because, although the laws regulating the phenomena of nature over all parts of the continent are constant and invariable, the *degree*, *direction*, and *conditional circumstances* under which they operate may, and often do, produce such strangely modified results, that when we descend to particulars we are sure to meet with the most irregular, varied, and unlooked-for phenomena.

"Let us now apply this train of reasoning in the case of the comparative anatomist, selecting for special illustration Dr. J. C. Van Hasselt's discovery of the peculiar mode of blood-circulation which obtains in Salpa —a genus of tunicated mollusks.

"The student of the circulation, who, during years of investigation, found this life-stream flowing through the ordinary channels in one invariable direction, has suddenly become acquainted with an animal in which the direction of the life-stream is periodically reversed; and, to continue our *simile*, this new experience is comparable to that of the traveler who has accidentally stumbled upon an unexplored district presenting unique geographical features. Here, then, you perceive, is a natural phenomenon utterly at variance with the investigator's former experience; and this fact, while it cogently illustrates, on the one hand, the danger of drawing general conclusions from the study of isolated genera or data furnished within a very limited area, does not, on the other hand, destroy the value of a wider generalization. The physico-vital laws regulating the flow of blood in *Salpa* are the same as those operating throughout the entire animal series; but the *degree*, *direction*, and *conditional circumstances* under which they act have given rise to phenomena not only unusual, but without parallel in the domain of the physiologist's experience; and I have thus shown that in one department of biology at least, the naturalist epitomizes the practical knowledge of the traveler.

"Again, I would ask you to bear in mind that the traveler or geographical geologist deals with phenomena as they occur in *space*. An evening's discourse would fail me to show you by illustration that phenomena in space have their dissimilar counterparts in *time*.

"This idea, indeed, has been in some measure substantiated by the late Professor Edward Forbes, in his discourse 'On the Manifestation of Polarity in the Distribution of Organized Beings in Time,' delivered in the theater of this institution on the evening of Friday, April 28th, 1854. Nevertheless, calling to our aid the inductions of the paleontologist, the experimental demonstrations of the physicist, and the sublimer researches of the astronomer, we are led to assume, by a species of analogy perfectly legitimate, that the laws operating throughout *space* are the same as those in *time;* and therefore I have submitted to your judgment a broad hypothesis, which, whether roughly or gently handled, is valuable only in so far as it reflects the harmonious outlines of inestimable truth.

"Were it desirable, by a further reference to existing facts, to increase the force of our hypothesis, for this purpose *any* of the more remarkable chemico-physico-vital phenomena which ordinarily present themselves to the mind of the biologist, might with almost equal advantage be adduced, and the truth thereby be rendered more conspicuous. Quitting, however, this special application of the subject, I have further to observe, that throughout the entire range of organized existences, whether animal or vegetable, there may be traced a community of plan both in structure and development; and it is while engaged in the study of any department of natural history knowledge, that we are sure to recognize its influence in the aspect of an all-pervading law. In every natural group of individualities, or of separate organs—such as those of special sense, for example—the working of this law is more or less conspicuous; and it is the recognition of its existence, despite the modifying power of interfering circumstances, which, to my mind at least, imparts a perfect charm to study of the sub-sciences of physiological botany and comparative anatomy, enabling us to interpret accurately the signification of every structural and morphological peculiarity, whether it occur in the human economy, or in the framework of any plant or animal.

"For the partial recognition of the bearings of this law, which Von Baer has defined as the 'law of development from the general to the special,' as well as for the full understanding of its character, it is fortunately not necessary that our studies should embrace the whole range of botanical or zoological science, although, of course, our conceptions of its power and universality are enlarged to a degree precisely corresponding with the range and direction of our pursuits; and as this community of plan, associated with variety of purpose, is not confined to any particular series of organs or organisms, it consequently follows that (in order to meet the varied requirements of the several creatures in which special developments occur,) we find the same series of homologous structures strangely modified in form and function to suit the foreknown exigencies of every species.

"From the tenor of this last observation, it might seem very natural that I should revert to the seemingly opposed theories of Cuvier and Geoffroy St. Hilaire; but the points in their dispute have been so frequently commented on by abler speakers, that I shall only offer a passing remark: I think we may fall in with the spirit of the Cuvierian hypothesis, and say thus much, at least, viz., that the totality of the phenomena presented by any individual, species, genus, or natural group of beings, indicates a distinct provision for the preservation and perpetuation of the individual, species, etc.; this provision being limited by the operation of antagonistic forces from within and without, necessary to the welfare of other coexisting species, etc.; and that the balance of these mutually-opposing influences is in the main progressive, conservative, and perfective. I have no wish now, however, to pursue this question further, otherwise I should be led to take into consideration Mr. Darwin's theory in relation to the origin and succession of species. In regard to the hypothesis of Geoffroy St. Hilaire, in so far at least as it applies to the development of particular organs, it is clearly manifest that many structures exist without the slightest utilitarian purpose being subserved by their presence; these are mere type-manifestations or morphological indications of some organ whose assumed completeness may or may not be present in some other living or pre-existing allied species."

THE DENTAL REVIEW, LONDON—APRIL.

"ODONTOLOGICAL SOCIETY OF LONDON.—The monthly meeting of the Odontological Society was held on Monday evening, March 4th, 1861.

"Mr. Bridgman, of Norwich, read a paper on 'Caries and its Treatment.' The writer commenced by observing that there are few points connected with the practice of dental surgery which have given rise to so much conflicting opinion as the cause of decay. Its precise nature and origin have long been a disputed question. It has been regarded, by one section of the profession, *not as disease*, but as being entirely due to the effects of *external chemical action*—that is, produced by the solvent power and corroding effects of some acid, generated in decaying food, lodged between and around the necks of the teeth, and finding access to the dentine through natural or artificial openings in the enamel. Another section, viewing the teeth as organic bodies having a strong analogy to ordinary bone, consider decay as a disease resulting from morbid action upon a vitalized organization.

"It is scarcely necessary to observe that these hypotheses, neither separately nor combined, are sufficient to account for decay in all its various phases, and that some further explanation is needed to satisfy the main bulk of the profession.

"After reviewing the various opinions which had been held with regard to the nature of the teeth, the writer proceeds to say, that in Fownes's 'Manual of Elementary Chemistry' it is stated that 'azotized albuminous substances, which, in a more advanced state of putrefactive change, act as alcohol ferments, often possess, at an earlier period of decay, the property of inducing an acid fermentation in sugar, the consequence of which is the conversion of that substance into *lactic acid;*' and, again, that '*moist animal membranes in a slightly decaying condition often act energetically in developing lactic acid.*'

"Now, as so large a proportion of our food contains sugar, or substances capable of being converted into it, and '*the moist animal membrane in a slightly decaying condition*' being provided by the dead portion of dentine, we have thus brought together under the most favorable circumstances the elements requisite for the production of an acid. Respecting this compound, Professor Brande says 'lactic acid has a considerable solvent power over phosphate of lime;' therefore we have not only the production of an acid, but the formation of one capable of dissolving out the earthy constituents of the dentine. But there is here one condition requiring especial notice. Moisture is so essential to chemical action that few chemical changes can occur in its absence: thus, while the dead membrane can remain comparatively dry, it is able to resist this change; but so soon as it becomes charged with additional moisture, the change suspected by Hunter will speedily follow.

"When speaking of the process of stopping, Mr. Bridgman stated he believed it had never before been suspected that the prepared cavity in most cases still bears strong traces of an acid. That it does so, is proved by the rapid action upon a metallic paste stopping. Most of the metallic oxides are soluble in lactic acid, and photography has taught us that many of these are darkened by the action of light, etc. Therefore, neutralizing the acidity in the cavity prior to the use of an amalgam *ought* to prevent its becoming discolored. This he had long since proved to be the fact, and that with *proper care* the mercurial stoppings or amalgams may be used even to the front teeth, as well as in those of delicate texture, without the slightest trace of discoloration. After clearing the cavity of so much of the softened dentine as may be needful, a small portion of a paste composed of chalk and magnesia is placed in the cavity, with as much moisture as will suffice to form a creamy consistence. The cavity is then filled lightly with lint, and this is suffered to remain until the stopping material is ready. Of course, the state of the tooth must regulate the length of time necessary to effect its completion; but in ordinary cases five or ten minutes will be sufficient. The cavity must be well syringed out with hot water several times previous to being dried finally for the stopping. Under any circumstances, he almost invariably had recourse to an alkali previous to plugging, and he rarely or never found discoloration follow when this had been carefully attended to.

"He concluded by observing that the human teeth are *not* merely *dermal appendages*, but a portion of the cutaneous system, all parts being so modified as to be peculiarly adapted to the altered circumstances in which they are placed and the special duty required of them.

"That *decay* is the natural death of the organic basis, or basement membrane of the dentine, and consequently a *vital phenomenon*. And that, subsequently, the presence of moisture in the dead membrane leads to the development of *lactic acid*, which is the cause of its progressive tendency, and that a more correct definition, instead of the term '*caries*,' will be '*vital decay*' so long as it retains its primary character, and '*chemical destruction*' when acidification has commenced.

"That artificial dentures of organic materials are subject to the same laws, and owe their destruction to precisely the same cause as do teeth in their sockets.

"That the epithelial cells, from the membrane of the gums, etc., also lead to the development of lactic acid, and are the cause of that destruction of the enamel so often met with in the upper front teeth. And that the formation of new dentine, or 'calcification,' as it is termed, is the result of the common law by which inflammatory lymph leads to the production of new tissue, and is consequent upon irritation caused by external agents acting upon the pulp and its dentinal fibrils. And to point out that the proper neutralization of the acid remaining in a decayed tooth, *prior to filling*, will not only render the stopping far more likely to prove successful, but will wholly prevent the dark stain hitherto considered one of the unavoidable accompaniments of amalgams, and thus render this class of stoppings infinitely more valuable to the profession."

Not having enjoyed an opportunity of reading the paper of Mr. Bridgman, in extenso, we are unable to say whether he has been reported correctly, when represented as asserting "that the human teeth are *not* merely *dermal appendages*, but a portion of the *cutaneous* system." Be that as it may, to our apprehension, in such a statement, an effort is made to establish a distinction when there could be little or no difference.

This is a subject in which we have long felt very deeply interested, and after a careful consideration of it, feel free to state that we have never been able to recognize the analogy between the teeth, hair, and nails, (first suggested by Dr. Blanville, and following in his wake, adopted by the majority of anatomists,) but, on the contrary, have found many reasons for regarding them as part of the *osseous* system. The development, growth, nutrition, structure, and chemical composition are each and all, when viewed in a proper light, so many evidences in support of that position. Want of space and time at present, however, prevents the presentation of our views on that subject.

THE DENTAL ENTERPRISE—APRIL.

"FILLING NERVE CAVITIES.—After every portion of decomposed pulp has been removed and the cavity thoroughly cleansed of all extraneous matter, the first step in the operation is to determine how far toward the apex of the root the gold can be safely carried.

"Where the diameter of the foramen of the canal is smaller than that of the canal itself, no difficulty is met with, but where the diameters are the same it is a nice point to determine the proper distance. There are several methods, however, for doing this; one of which is to introduce a curved instrument having a spring temper into the canal, until it reaches the foramen and springs over. Another is to be guided by the average length of the roots of the different classes of teeth. Great care, however, is necessary that the gold is not passed through the foramen to the soft parts. It is not necessary here to speak of the result which would follow such an accident.

"There are various ways of preparing the gold previous to its introduction into the canal of the root, but the method we shall here describe is at once simple and complete. With a pair of plugging pliers small pieces are torn from a sheet of foil, the size of the pieces varying with the diameter of the canal into which they are to be introduced.

"Having determined the distance to which the gold can be safely carried, one of the smaller pieces is introduced into the crown cavity with the plugging pliers, and passed a short distance into the canal with a spring-tempered introducer, this instrument being very little less in diameter than the canal where it opens into the crown cavity. By using an instrument of this size the piece is readily carried a certain distance into the canal. A smaller introducer is then used to carry the gold still farther up, until, by means of several other instruments of this class suited to the diameter of certain parts of the canal, it is placed in the proper place for it, which will be very near to the apex of the root. Another piece of gold is carried to its place in like manner, and every piece should be well condensed, with the same instrument used for introducing it, before another is added, commencing with the smallest pieces, and using larger ones as the diameter of the canal increases toward the crown of the tooth. By using the gold in this form there is no danger of blocking up the canal before it is well filled, as is the case where the gold is in the form of cones, pellets, etc. And, if the proper care is taken to condense each piece after it is introduced, at least as dense a filling can be made by this as by any other method."

"ARSENICAL POISONING.—VALUABLE SUGGESTIONS.—Professor Hayes, State assayer of Massachusetts, in a communication to the *Boston Journal* offers some valuable suggestions in relation to instances of arsenical poisoning, several cases of which have been brought to his notice.

"The facts stated in his communication are startling, and command the attention of those of the public who desire to avoid the unpleasant consequences of an introduction of arsenic into the system. The use of arsenio-acetate of copper ('Schweinfurth green') as a pigment is pronounced highly deleterious to health. It enters into the composition of the coloring of wall-paper and other decorations; also into the green paper boxes, cards, and artificial leaves and flowers. The most dangerous use to which it is applied, however, is for the coloring of confectionery. For paper it is selected on account of its brilliant hue, and for other purposes because of its cheapness.

"Arsenic, in its various forms of chemical combination, is often found in other pigments than green. But this is not the only virulent poison which is used to an alarming extent for toilet purposes. The nitrate and sub-nitrate of bismuth are considered by costumers to be the most delicate white that can be obtained, and, in its pure state, its use is perhaps not attended with any immediate injurious results. This chemical preparation, however, is seldom found in its pure state, being too expensive to command ready sale at remunerative prices. It is, therefore, often adulterated with chalk; but this giving it too dull an appearance, a preparation of arsenic is incorporated to add brilliancy to its body. Thus the 'flake white' of the toilet is produced; and in a liquid form arsenic enters into the composition of 'milk of roses' and other fashionable pigments intended to improve the human complexion. Carmine produces the most beautiful blush, but it is so expensive as to tempt adulterations, and in the hands of unprincipled though skillful chemists, poisons as deadly as the preparations of arsenic are employed. Perhaps the only harmless preparation for cosmetic purposes is *pickled beets*."

DENTAL REGISTER OF THE WEST—MAY.

"PROFESSIONAL SUCCESS. By A. S. TALBERT, D.D.S. (Read before the Kentucky State Dental Association.)—I will give you an example to show you how little things may become important elements of success. A servant girl once called at my office to have me extract a tooth. I seated her in the chair, and, having washed my hands as I always do before going to my patient, I performed the operation. A few months after, her mistress called on me, and, paying a handsome fee for professional services, she became ever after while she lived, my steadfast friend. She told me she came at the instance of her servant, who said she 'never before saw a *white man wash his hands to wait on a nigger!*' Thus a simple act of kindness, (for it was nothing more, my hands being as clean as her mouth,) shown even to a slave, was a hundredfold rewarded, adding more to the *success* of the operation than any superior skill could possibly have done."

In connection with the incident narrated by Dr. Talbert, we would take occasion to say that it is not enough for the operator to be satisfied that his hands are clean, he should, by *laving* or *washing* them in the presence of the patient, prevent the establishment of any doubt in his or her mind. As a general thing, patients have but little reason to complain on this point. We remember, however, that, several years ago, a patient on one occasion said that she remonstrated with a practitioner (who was more celebrated for extracting than saving teeth) for passing from one patient to another with the same bloody hands and instruments, and suggested the propriety of employing a little water between his operations. To this he responded that if he should do so, he would have to keep his hands in the wash basin all the time. It is hardly necessary to add that the patient left and never returned.

* * * "Our offices are not a fit place for social intercourse, they are for *business.* While in them we are to treat all with the same respectful consideration during the time required for professional services. But it is not our duty to offer inducements to any to remain longer. Do not, therefore, urge them to stay; you do not know at what moment a patient may call whom you would prefer to meet alone; you do not want *either* to hear the *other's* complaints or commendations. Have you not had Mr. A., whom you have not seen for *three years,* come in just as you were making an engagement with Miss B., and say in her presence, 'Doctor, one of the plugs you put in for me *last year,* came out a few days ago,' when in fact it had never been filled by any one; or, perchance, had been filled many years before by some other dentist?

"Miss B., in the mean time, has left with an unfavorable impression, strengthened, it may be, by some casual remark of some admirer of your neighbor dentist, and *possibly* you see nothing more of her—for our patients do not *always* fulfill their engagements. But this fact does not afford any pretext for the neglect of *our* engagements. * * *

"Much of success depends upon the *manner* of our operating; it is not to be done hurriedly, nor are we to wear out our patients by too long sittings. Again, there are those for whom it is well to operate *when you have the opportunity.* A correct discrimination as to the *time* is equally as important as the *manner* of operating. 'There is a time for everything under the sun.' Have your instruments in proper order before your patient sits in the chair, that the sharpening may not grate harshly on his ears, or the cleansing be associated with their previous use. Listen to your patient's wishes; have respect to them, but consult your own interest and that of your profession first, both of which being combined are paramount to his. If his teeth are to be filled, he will say to you, 'fix the worst ones first.' Are you to do it? By *no means!* A little *placebo* may be necessary; a little camphor and cotton; make the application, and by the time you have filled the smaller cavities, your camphor will have done wonders. But how? Not so much in its having 'toughened the inflamed dentine,' as in your having obtained the confidence of your patient and in his better control of his nerves, by which he will better bear the operation, and so afford you an opportunity to complete it in the best possible manner; whereas, if you had commenced with the 'worst ones,' your patient's courage might have failed him by the time *they* were completed. Do not then begin with '*the worst,*' for by so doing you take *all the risks,* among which may be mentioned the larger quantity of material required, the more time consumed, and the greater liability of the teeth to furnish cause for complaint by their aching, or sensibility to changes in the temperature of the food and drinks.

"Let the same rule be observed in the extraction of a number of teeth, commencing with the one most easily drawn, and you will thereby inspire confidence and give courage."

"Diagnosis. (Read before the Mississippi Valley Dental Association, Feb. 20, 1861.) By Dr. W. H. Atkinson.—Diagnosis, from the Greek words *Δια,* through, and *γινωσκω,* to know. Hence, to see through a case to demonstrative perception of the physical condition present.

"One may be accurately acquainted with the exact sciences to the full limit of chemical equivalents and the mutations of numbers, and able correctly to reply to all interrogatories touching anatomy and known physiology and the true theories of pathology, so far as they can be taught by books or words, without specific actual cases to '*seal the instruction*,' and yet be unable to diagnose the simplest case of disease presented in actual practice; simply because the knowledge has not become his own by the certain illumination of perceptive unfoldment enabling him to comprehend appearances. * * * * * *

"Diagnosis, to be useful, must not only be clear and satisfactory to our own minds, but made so plain to those in charge of the case as to make them *alive* to the real necessities present; thus securing that co-operation, without which all our cases will be retarded, if not rendered altogether nugatory, or a real damage to those we had essayed to benefit.

"Instructions, ever so minutely given and earnestly enforced, are less efficient for good than when unaccompanied with a clear and philosophical, yet plain statement of the reasons upon which they rest.

"I am fully aware that this sort of earnest mode of practice is no less a novelty than the other more laborious methods of performing faithful works.

"Easy and superficial methods of investigation are not the most successful roads to certainty of diagnostic competence.

"No competent diagnoser will set up his authority as *the* standard, but will always rely upon the perception of those to whom he wishes to make it clear, and in this very democracy (of the most elevated power in reach of the professional man) is there safety, for this very recapitulation of the case may illuminate either his own or the perception of those to whom delineating upon points that had before escaped notice, thus securing certainty in his own mind and the confidence of the other. * * *

"It is pertinent to ask whether the diagnostic exercise of the mind be a natural gift, or if it is capable of being taught. To which I would reply, that 'all we have we did assuredly receive;' but if we only keep it in the state in which we received it, there would not be enough in possession of the power to establish a rule to govern us. And, therefore, like our other powers, it must be cultivated to give us a useful control over it. Like the fire, a wild electricity in the circumambient air, being actively and positively there, but until it has been set in motion by the proper means, and concentrated in the helix or the Leyden jar, it is not in our power to give it direction by our will. But the instant it is so harnessed and brought into harmonious relation with our mental centres by the various means of conducting the current, we may discharge the battery or jar by gentle, unseen induction, by visible sparks, or in one grand, terrific explosion, just as the caprice of the will may dictate.

"So every item of knowledge the professional mind has stored away in its Leyden jar serves to intensify any particular mental effort, worthy of the name of effort, in the inductive, spark-like, or explosive form. (I suppose this might explain the immoderate disgust and indignation professional men formerly manifested when any one dared to express a doubt of their skill or integrity—they were so charged with this science motor, as to explode when promptly brought in contact with a powerful conductor, suddenly closing the circuit upon their central battery, self-love.)

"The various precious odors owe their value to the capability of being volatilized and scattered when wished to be put to service, and then all within the sphere of influence appreciate and enjoy them. But that they may be transported from place to place for our pleasure or profit, they must be '*sealed*' tightly, and deprived of the liberty to escape. In like manner, all instruction must be '*sealed*' also, to enable the mind to retain and transport it for pleasure or profit. Now, this sealing of instruction is but the closing of the circuit of complete demonstrative teaching by nature or competent leaders in the departments of science. * * * *

"The ground properly embraced in the physical structure and diagnosis of human teeth in health and disease has so recently been turned up to the sunlight of scientific observation and cultivation that it has of necessity given an impetus to collateral science that they will soon have to acknowledge, which, however, we should care less for than to know that it has thus furthered their interests. Surgery and chemistry in particular have been thus benefited by the researches of dentistry. How shall the tyro best employ his time to attain the one prime necessity of a successful career in practice?

"Not in the examination of cases he never can see again, or more than a limited number of times at irregular periods. Not in hasty, crowded private practice, where no time nor ability, if the patient consented, were allowed to fully delineate the nice distinctions of the various stages of disease in the diverse structures presented. But in such cases as, in whosesoever hands, can be seen from inception to termination, of which the pupil takes sketches and notes in his own language, and reads and discusses in the presence of some one able and *willing* to 'point' and 'seal' the wholesome instruction to his enlargement, so that he have the type of one class of cases from which he need never to depart. Next, a case nearly allied to this, but with marked modification of temperament, sex, nationality, or other molecular difference, from whatever cause.

"And so on through all the modifying circumstances of the entire routine of oral diseases and aberrations from the perfectly healthy standard. If such a course of diagnostic instruction were faithfully followed, we would soon be made aware of the increased ability of our profession in this very important particular, and our pupils would return to their former tutors to turn the tables upon them, and prove to them that if they were younger in years, that they were their seniors in useful ability to see through the various cases daily presented.

"To be a good diagnoser, it is imperative to understand principles and laws in preference to formularies and modes. And to be able to comprehend these, native powers must not only be good, but kept in action by continued application, thus insuring the healthy growth so much needed to make their 'vigilance' the watch of 'intelligence' that strikes down none but foes in the dark or in the light.

"That the greatest impetus may be given to diagnostic power, it behooves those who have attained this high ability to so clearly point the way to inquirers that they may begin where we leave off, which cannot be done unless we relate our failures in opposition to our successes, to constitute the sure basis of demonstrative teaching that shall be able to convince the most rigid hair-splitter that we meet, by the diffusion of *all* we *know* for the good it may do."

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEO. J. ZIEGLER, M.D.

Recurrent Sensibility.—After some general remarks on the comparative anatomy of the medulla spinalis, and the precautions necessary in operative physiology, M. C. Bernard makes the following observations upon this subject in his lectures on the nervous system in the *Med. Times and Gazette:* "When proper care has been taken to avoid the above-mentioned difficulties, the existence of recurrent sensibility, as a constant property of the motor branches, will easily be ascertained. The operator having laid bare one of the spinal pairs, the animal evinces acute pain when either of the roots is excited; so that, in the normal condition, both orders of nerves are evidently endowed with a high degree of sensibility. The anterior root being now divided, its peripheric extremity will be found sensible to various kinds of stimuli, while the central portion remains unaffected; such is the phenomenon which has been described under the name of Recurrent Sensibility. It is evidently derived from the influence which sensitive nerves exert over the corresponding motor branches; for, as soon as the posterior root is divided, all sensation is at an end in the motor nerve, and the central portion of the sensitive root, which lies in contact with the spinal marrow itself, alone retains its characteristic property.

"The absolute independence of each nervous pair, taken individually, is evidenced by the fact that recurrent sensibility still continues to exist in a motor nerve when the pair which lies above and that which lies below it have simultaneously been divided. As long as the corresponding posterior root remains uninjured, the sensitive powers of the motor nerve retain their usual force.

"This singular property, which invests the motor branches with faculties derived from the sensitive apparatus, is to all appearance derived from the anastomoses which take place between their terminal extremities; it has also been supposed that, after reaching the surface of the body, certain sensitive filaments are conveyed back to the nervous centre along the motor branches. It is, at all events, an indisputable fact, that the exchange of nervous fibre does not immediately take place after the junction of the spinal roots, but occurs at a much greater distance; for, if the mixed nerve which passes through the intervertebral aperture is divided, recurrent sensibility is abolished in the corresponding spinal root.

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"Among the various experiments which have led us to more accurate notions concerning the functions of the spinal cord, the first in date as well as in importance, is that which consists in setting forth the difference between motor and sensitive nerves, by separately dividing the anterior and posterior spinal roots. In demonstrating so elementary a proposition, it is hardly necessary to employ animals belonging to the higher classes: the lower orders of vertebrata exhibit this property in the same degree; and although the operation has usually been performed on mammals, we shall content ourselves, in the present instance, with repeating it on frogs.

"[Two of these animals are now brought in, and placed upon the table; one of them has undergone a double mutilation, the anterior roots corresponding to the lower extremities having been cut through on the right side, and the posterior ones on the left; the other frog has not been interfered with.]

"You perceive, gentlemen, that on pinching the left leg of this frog with a pair of forceps, the animal evinces no pain whatever; all sensibility has therefore disappeared in this region, subsequently to the operation performed on the posterior roots: while, on the other hand, if we repeat the experiment on the opposite side, a contraction is immediately produced, not in the right limb itself, which remains motionless, but in the left one: sensation, therefore, has been abolished on one side, and motion on the other—the posterior roots having been divided in the first case, and the anterior ones in the second. It is therefore evident that sensation is exclusively the privilege of the posterior spinal roots, and motion of the anterior ones. We think it unnecessary to dwell any longer upon this point.

"But the delicate experiments in which the recurrent sensibility of motor nerves is exhibited, can no longer be performed upon batracians; animals of a higher class must be selected for this purpose: and great precautions are indispensable when it is desired to place these interesting phenomena in a proper light. After opening the vertebral canal, and laying bare the spinal cord, the animal must be allowed to recover its forces before commencing the experiment. The sudden depression of the vital powers which follows this operation has already been mentioned; and a remarkable instance of this fact is afforded by the effects produced on the facial nerve: this branch in its physiological state possesses a large amount of recurrent sensibility; but when the spinal canal has been laid open, it suddenly bècomes insensible, although no direct interference with its own fibres has taken place, and does not resume its usual properties till the animal has recovered from the shock. The temporary paralysis which occurs in the anterior spinal roots, when laid bare after a tedious operation, is therefore a natural result of the nervous exhaustion which constantly accompanies intense suffering, and disappears after a certain lapse of time.

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"The immediate causes of recurrent sensibility, as we stated the other day, are still deeply involved in doubt; but the most plausible explanation hitherto brought forward consists in attributing this property to the presence, in the motor trunks, of a certain number of sensitive fibres, which, after reaching a given point, turns back, and runs parallel to the voluntary nerve up to the central axis from which both are derived. The valuable labors of modern micographers on the structure of the nervous element have shown that in the sensitive apparatus the primitive tubes are narrower and of a more cylindrical form than in the opposite system; but if these data are to be relied upon, the spinal roots are never exclusively composed of sensitive or motor filaments: the anterior roots contain a few cylindrical tubes, and the posterior roots a small number of flat ones.

"Professor Arnold endeavors to remove this apparent contradiction by supposing that the various branches which arise from the spinal cord are not to be viewed as mere agglomerations of sensitive or voluntary fibres; but that the anterior roots, being chiefly intended to supply the muscles with nervous influence, contain a larger amount of voluntary fibres than the posterior ones, which are chiefly distributed to the skin. It is not surprising, therefore, to meet with sensitive fibres in the motor nerves, the muscular tissue being endowed with sensibility, nor with motor fibres in the sensitive nerves, the skin itself being possessed of a certain degree of contractile power.

"This ingenious hypothesis does not, however, agree with the phenomena of recurrent sensibility; if sensitive fibres are met with in motor branches, and *vice versa*, the reason is that a certain number of nerve-tubes, reaching their respective destinations, are reflected, and fall back upon the ramifications of the opposite apparatus; but we should not be justified in supposing any sensitive fibres to be directly derived from the anterior tracts of the spinal cord. If this were the case, the sensorial power of the anterior roots would not disappear when its posterior roots are divided; and when the experiment is repeated on the motor branches alone, sensibility would be found to reside, not in the peripheric, but in the central extremity of the divided nerve. It seems therefore evident that the sensitive fibres which lie within the motor nerves are derived from the posterior tracts; and if this is the case, there is no difficulty in supposing a similar arrangement to exist with respect to motor fibres. Such is, probably, the origin of the flat tubes discovered by micographers in the midst of the narrow cylindrical filaments of the sensitive apparatus. We shall presently see what the physiological functions of these reflected motor nerves may be supposed to be; but this question leads us to examine not the *functions*, but the *properties* of the spinal cord, for the properties of our organs are not identical with the functions to which they are devoted; the part which an apparatus plays in the economy does not always enable us to foresee the effects which external agents produce upon it. Now, the spinal axis is in reality a distinct apparatus —an organ closely connected with, but not resembling, the nerves in its intimate essence and internal structure. Anatomists have long been accustomed to view the columns which succeed to the spinal nerves as the direct continuation of their fibres—an opinion which we know at length to be altogether erroneous; for, as we shall endeavor to convince you in a future part of this course, the posterior tracts which transmit sensations to the brain are not capable of perceiving sensorial impressions themselves when acted upon by direct stimuli; their properties are, therefore, widely different from those bestowed on the circumferential ramifications of the nervous system.

"The spinal cord is, therefore, composed of special nervous fibres, and of certain peculiar cells from which the spinal nerves set forth; it also contains nutrimentary vessels, cellular tissue, and other accessory elements. Now, the primitive cells from which the sensitive nervous fibres are derived give off a few of these to the spinal marrow itself, which would otherwise be totally deprived of ordinary sensibility; and likewise the cells which send forth the anterior and motor fibres give off a few of these to the corresponding portions of the spinal cord; these motor fibres are distributed to the vessels of course, for in the vessels alone is their agency required: they belong therefore to the interesting class of *vaso-motor* nerves, of which more hereafter. In short, gentlemen, if the vascular tissues are themselves provided with their own vessels, (vasa vasorum,) the great nervous centres are equally provided with their own nerves, (nervi nervorum;) the posterior tracts are in this manner supplied with sensitive nerves, and the anterior columns with motor ones; but the cells connected with the posterior portion of the central axis do not appear to extend their ramifications into its anterior division: hence arises the necessity of *recurrent fibres*, which bestow upon a considerable portion of the spinal cord that sensibility of which it might otherwise be entirely deprived. Such, if our hypothesis were correct, would be the key to these singular phenomena; and, for reasons similar to those just adduced, a certain number of recurrent fibres are derived from the motor system; the contractile tissue of the vessels which ramify over the posterior tracts is in this manner supplied with nervous influences. These views, although perfectly consonant to all that is known with reference to recurrent sensibility, have not as yet been sanctioned by direct investigation; it would for this purpose be necessary to perform an experiment which has never yet been tried—namely, to galvanize one of the anterior roots, and note the effects produced upon the corresponding vascular apparatus, in the posterior region of the spinal marrow; and, whether contraction or dilatation of the vessels took place, the existence of recurrent fibres would be fully demonstrated with respect to the motor nerves, as well as in the case of the sensorial apparatus. In this manner would anatomy and physiology be made to agree, for no physiologist can believe the spinal nerves to be of a mixed nature from the very beginning; how, in this case, would sensibility be totally destroyed in all parts of the system by cutting through the posterior roots? a fact which we shall now demonstrate by direct experiment."

Etiology of Dental Decay and Deformity.—In a recent publication on mal-respiration, the author, Mr. George Catlin, celebrated as a traveler among the Indians, takes strong ground against the habit of breathing through the mouth instead of the nostrils, and especially during sleep. He thinks it is a prolific cause of disease, and among other derangements believes it occasions various abnormities of the teeth. The following extracts from his work, for which we are indebted to the *Amer. Med. Times*, will exhibit his views upon this subject: "The statistics of England show an annual return of '25,000 infants, and children under five years of age, that die of *convulsions.*' What causes so probable for those convulsions as teething and the croup? and what more probable cause for the *unnatural* pains of teething and the croup than the *infernal* habit which I am condemning?

"At this tender age, and under the kind treatment just mentioned, is thoughtlessly laid the foundation for the rich harvests which the dentists are reaping in most parts of the civilized world. The infant passes two-thirds of its time in sleep, with its mouth open, while the teeth are presenting themselves in their tender state, to be chilled and dried in the currents of air passing over them, instead of being nurtured by the warmth and saliva intended for their protection, when they project to unnatural and unequal lengths, or take different and unnatural directions, producing those disagreeable and unfortunate combinations which are frequently seen in civilized adult societies, and oftentimes sadly disfiguring the human face for life.

"While there are a great many persons in all civilized societies who adhere to the designs of Nature in the habits above referred to, how great a proportion of the individuals of those societies carry on their faces the proofs of a different habit, brought from their childhood, which their constitutions have so far successfully battled against, until (as has been said) it becomes like a second nature, and a matter of *necessity*, even during their waking hours and the usual avocations of life, to breathe through the mouth, which is constantly open; while the nasal ducts, being vacated, like vacated roads that grow up to grass and weeds, become the seat of polypus and other diseases!

"In all of these instances there is a derangement and deformity of the teeth, and disfigurement of the mouth, and the *whole face*, which are not natural; carrying the proof of a long practice of the baneful habit, with its lasting consequences; and producing that unfortunate and pitiable, and oftentimes disgusting expression which none but civilized communities can present.

"Even the brute creations furnish nothing so abominable as these—which justly demand our *sympathy* instead of our *derision*. The faces and the mouths of the wolf, the tiger, and even the hyena and the donkey are agreeable, and even handsome, by the side of them.

"What physician will say that the inhalation of cold air to the lungs through such mouths as these, and over the putrid secretions and rotten teeth within, may not occasion disease of the lungs, and death? Infected districts communicate disease—infection attaches to putrescence, and no other infected district can be so near to the lungs as an infected mouth.

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"The American Indians call the civilized races '*pale faces*' and '*black mouths*,' and to understand the full force of these expressions, it is necessary to live awhile among the savage races, and then to return to civilized life. The author has had ample opportunities of testing the justness of these expressions, and has been forcibly struck with the correctness of their application on returning from savage to civilized society. A long familiarity with red faces and closed mouths affords a new view of our friends when we get back, and fully explains to us the horror which a savage has of a 'pale face,' and his disgust with the expression of open and *black mouths*.

"No man or woman with a handsome set of teeth keeps the mouth habitually open; and every person with an unnatural derangement of the teeth is as sure seldom to have it shut. This is not because the derangement of the teeth has made the habit, but because the habit has caused the derangement of the teeth."

Dentistry in Turkey.—In the course of a highly-interesting paper on "Turkey from a Medical Point of View," in the May number of the *N. Amer. Med.-Chir. Rev.*, Dr. W. Goodell gives the following spirited sketch of the state of dentistry in that country: "Upon another occasion, the aristocratic nerves of his majesty were cruelly unstrung by the vulgar twinges of a toothache; which, imitating the example of many a rebellious pasha, traitorously entrenched itself within a molar, and refused to capitulate to the innumerable ptisans, fomentations, nostrums, spells, and incantations of the whole empirical and non-empirical faculty. Spurning the tears of the Sultanas, and the entreaties of all the favorite *Odaliques* of the *harem*, the royal sufferer sleeplessly paced his ancestral halls for several days and nights, before he could screw up his courage to the pulling point. But, to the dismay of the chamberlain, in all

Stambul not a barber or dentist, for love of money or reputation, was found so disloyal as to aspire to the *crown* of his imperial sovereign. American dentists may smile at the pusillanimity of their Oriental brethren, but let them remember that any accident in the extraction of a royal tooth, whether fracture, delay, or any additional pain, might consign the bold operator to the bastinado, or to the tender mercies of the bowstring. At last, an obscure Jew, who had never looked higher than the jaws of his Hebrew customers, was induced to risk his heels and his neck in the dental encounter. Thrice prostrating himself, he entreated the Sultan to show his slave the offending molar. Quick as thought the forceps were applied, and immediately the Jew fell down, with a piercing shriek, at the feet of his master, in a well-assumed fit of epileptic convulsions. Up jumped the Sultan from his throne, forgetting, in his terror, his toothache, his dignity, and the pain of the extraction, and ordered his pages to bring cordials and water for the unfortunate dentist. The wily Jew, perceiving that a hydropathic treatment was imminent, and that this buffoonery had produced the desired effect of distracting the royal attention, now convalesced with great promptness, triumphantly exhibiting the tooth to the astonished monarch and courtiers. It is hardly necessary to add, that not only was the integrity of his gluteal fascia respected, but Israel went forth from the palace, even unto his kindred, with shekels of gold and shekels of silver."

"*Morbid Condition of Nerve-tissue in 'Ulcus Noma.'*—A. J. van Zadelhoff has described several cases of this disease, in which the nerves appropriated to the affected parts were carefully examined. From his observations he infers that the predisposing cause of this malady is to be sought in a peculiar condition of the blood and solids, and that in this state the second branch of the fifth nerve is, as a rule, preferentially affected. In one case his description of the actual state of the nerves was as follows: Two branches of the facial nerve directly lost in the gangrenous parts were swollen and red with injected vessels. The root of the fifth nerve inside the skull on the corresponding (the left) side was quite brown to its insertion into the pons Varolii, owing to blood, which quite filled the cavernous sinus. This brown color extended over the Gasserian ganglion and its three branches. The sixth nerve was also very red, and the space between the two was filled with coagulated blood. Microscopical examination showed that the nerve fibres of the infra-orbital nerve were everywhere surrounded with fat granules, while the primitive filaments were all in a state of decided fatty degeneration. The nerve root, which on the left side was of a brown color, was in a state of fatty degeneration; on the right side this fatty state was not absent, but it was less in degree."—(*Brit. and For. Med.-Chir. Rev.*)

"*Case of Successful Treatment of Ranula by Electricity.* By Dr. Scarenzio. (Omodei Annali Universali di Medicina.)—A woman, aged sixty-five, applied at the Mantua Hospital on account of a ranula situated on the right side of the frenum, and which having during three months attained the size of a walnut, caused an obstruction both to speech and mastication. There was some swelling of the submaxillary gland of that side, but this had diminished with the enlargement of the tumor of the mouth. The affection being uncomplicated, it was determined to resort to electricity in its treatment. Two pairs of Bunsen's pile were employed, and a steel needle attached to the negative pole was passed about four centimetres into the fluctuating tumor, the other extremity of the pole being brought into contact with the outer surface of the lower jaw. The current was allowed to act for almost a quarter of an hour, the patient only complaining of a slight smarting. At the seat of puncture an eschar, a centimetre in size, was formed, and on the removal of the needle a portion of the fluid was discharged, the whole afterward flowing out during the movements of the mouth. Next day strong local reaction was set up, accompanied by considerable fever, which yielded to bleeding and purgatives. In a few days the eschar came away, and the granulating wound healed, without any further collection of fluid having taken place in the cyst, which contracted upon itself. The function of the orifice of the Whartonian duct was recovered, saliva being seen issuing therefrom. The woman was seen on other account more than fifteen months after the operation, and the cure was found to have held perfectly good."—(*Ibid.*)

"*Philosophy of Death by Chloroform.*—In a recent communication to the *American Medical Times*, Dr. Percy suggests that death is usually, if not always, produced by mechanical suffocation. In three cases which came under his observation within the past year, and which were upon the point of suffocation, all were promptly relieved by 'depressing and bringing forward the tongue.' He says that Dr. Swinburne, of Albany, entertains the same view: 'that death from inhalation of chloroform was in most instances caused by suffocation, owing to the tongue falling back, and preventing air from entering the lungs;' and further, 'that he had performed experiments on dogs, and *demonstrated it to be a fact.*' Surgeons of our acquaintance are in the habit of attending to this little mechanical trick for the relief of patients threatened with suffocation from the inhalation of chloroform; but we doubt if many who have observed this subject with much care will readily assent to this being more than one of the incidents of chloroformization."—(*Cincinnati Lancet and Observer.*)

"*Necrosis of the Ascending Ramus of the Lower Jaw in a Boy; Successful Removal.* By MR. ERICHSEN.—Necrosis of the jaws is a disease not commonly witnessed in the young, except as the result of some form of injury, of struma, or from the effects of the fumes of phosphorus. A case, however, presented itself, in which neither of these could be stated to be the direct cause of the disease, as it followed the simple extraction of a back molar tooth. The patient was a lad between nine and ten years of age, otherwise in good health, in the right side of whose mouth could be distinctly felt a projecting piece of dead bone, near the second molar tooth of the lower jaw. The aperture through which the bone protruded was large, but Mr. Erichsen could not say to what extent the bone was affected until he had endeavored to remove it. The face was quite swollen. When narcotized with chloroform, on the twenty-seventh of March, an effort was made to extract the bone; only a few fragments were got away with forceps, yet there appeared to be a large sequestrum remaining. The aperture was therefore enlarged, and by the aid of strong forceps the bone was well laid hold of, and gradually extracted. Its extent seemed astonishing, for it comprised the whole of the right ascending ramus and coronoid process of the lower jaw, with the exception of the condyle. This had been partially jammed into the shell of new bone, and was not easily extracted until the aperture was enlarged, as already stated. The sequestrum involved the entire thickness of the lower jaw, and was situated somewhat to the inner side of the new bone. Mr. Erichsen believed that the condyle remained in connection with the case of new bone, and had not lost its vitality. The boy would therefore have good motion in the tempero-maxillary articulation at a later period, and would no doubt make a good recovery.

"An interesting point in the treatment of this case was the removal of a sequestrum from the situation it occupied, in the present instance, entirely through the mouth, without making any wound in the cheek, notwithstanding that there was more trouble in thus getting it away. Some surgeons would not have hesitated to perform a sort of partial resection of the jaw in this case."—(*Lancet.*)

Nervous Diseases caused by Syphilis.—"Dr. Leubuscher, who has made a special study of the diseases of the nervous system, and who has been Professor of Clinical Medicine at the University of Jena, but resigned some years ago and returned to Berlin, has just brought before the Med. Soc. of that city his observations on those nervous disorders which are consequent upon syphilis. According to him there are three classes of cases of this kind, viz., such in which the nervous affections are caused by a morbid process spreading to the nervous matter from the parts surrounding it, such as meningitis dependent upon syphilitic caries of the skull, or neuralgia and paralysis caused by exostoses pressing upon one or several nerves; secondly, cases in which the syphilitic cachexia produces a disposition to diseases of the nervous system, which, however, only take place if other causes supervene; thirdly, cases of syphilitic exudations which occur into the nervous tissue just as into other organs, (skin, testicle, etc.) He affirms that in all these cases no pathognomonic symptoms are to be observed, but that the diagnosis, whether the case is one of syphilitic origin or not, must be deduced from the history of each case individually. They are always observed at a later period of the disease, and belong to the so-called tertiary symptoms; they may take every form of nervous disorder that exists. Thus he has seen cases of sciatica, brachial neuralgia, tic douloureux, epilepsy, impotence, and paralysis due to venereal disease. Diseases of the mind are also produced by syphilis; these are generally cases of syphilitic hypochondriasis, which is either due to anxiety and distress felt about relapses by which the patient believes himself to be threatened, or by shame, or by disturbances of nutrition in the brain. In this case only circumscribed parts of the encephalon are affected, but there is no progressive morbid change of the cortical substance. Dr. Leubuscher has also observed cases of mania and delirium, but denies the correctness of Jacoby's theory that syphilis and gonorrhœa are the most frequent cause of insanity. He thinks that, generally speaking, syphilis is too frequently looked upon as the cause of diseases of the nervous system; and regrets that, in pursuance of this view, patients are sometimes treated with mercury when this is especially injurious, as in atrophy of the spinal cord. After this paper had been read, Professor A. Von Graefe remarked that more than one-half of a very large number of cases of paralysis of the third pair which he had seen were consequent upon syphilis. Amaurosis syphilitica is generally dependent upon choroiditis or retinitis, and the ophthalmoscope has always shown specific pathological changes in such affections."—(*Med. Times and Gaz.*)

Surgical Diseases of the Tongue.—MR. WEEDEN COOKE made a communication on this subject to the Harveian Soc. of London, "and illustrated it by numerous drawings of the various pathological conditions of that organ, casually glancing only at the varying aspects of the papillæ in diseases which come more immediately under the notice of the physician. Mr. Cooke gave a rapid survey of those injuries and diseases of the structure of the tongue which are generally considered to be surgical cases. *Wounds*, whether incised, contused, or lacerated, invariably heal rapidly in healthy constitutions, a circumstance which was doubtless due to the high organization of the part, and in some measure, perhaps, to the beneficial influence of the salivary secretion. *Idiopathic glossitis* was a remarkable disease, arising at times without any assignable cause, and happily entirely under the control of the surgeon. Incisions and antiphlogistic treatment very quickly overcame the malady. *Hypertrophy*, depending either on chronic inflammatory action or on tuberculosis, was a more serious and protracted lesion of this organ. In either case it was an indication of diminished vital power, and for its relief cod-liver oil and iron, with or without iodide of potassium, and generous diet generally proved most beneficial; but it was always a troublesome affection, the cure of which required much patience and prudence on the part of the sufferer. Sea-air was always most serviceable in these cases. *Ulceration*, occurring in this organ, was either aphthous, dyspeptic, strumous, syphilitic, or cancerous. The proper diagnosis of the origin of the ulcer was most important, inasmuch as the treatment required in each case was peculiar to itself, and could not be beneficial unless addressed to the systemic condition out of which arose the ulcer under consideration. After describing the aphthous, dyspeptic, and strumous ulcers of the tongue, and exhibiting drawings of them, Mr. Cooke contrasted especially the syphilitic and cancerous ulcers of this organ, and stated that they were often confounded; that syphilitic ulcers with much induration of the tongue had been treated as cancerous, remaining for years without benefit until, the proper diagnosis being arrived at, they had been cured so rapidly as to excite wonder on the part of the patient. Whenever a person presented himself with an ulcer of the tongue, it was always necessary to investigate minutely his whole constitutional history, observing with especial care any cutaneous eruption of even the most trifling character. Thus armed, we may take into consideration the peculiarities of the local ulcer, and so arrive at a mature judgment respecting the group in which it should be classified, the treatment it should undergo. 'And in these investigations,' said Mr. Cooke, 'it is necessary to take nothing for granted, the patient often deceives himself, or is really ignorant of his having a syphilitic taint; and if we do not examine carefully for ourselves, we also shall be led astray in the diagnosis, upon which depends the life and happiness of the patient, as well as our own credit as skillful surgeons.' After describing the different characteristics of syphilitic and cancerous ulcers of the tongue, Mr. Cooke alluded shortly to the distinctions between *syphilitic and cancerous tumors* of this organ, showing that the soft, elastic feel of the one contrasted vividly with the hard, cartilaginous sensation produced by the other. *Operations* for cancer of the tongue never succeeded in checking the disease for any length of time. If it did not return in the organ itself, the sublingual or submaxillary glands quickly took on the same action, and the misery of the patient was enhanced by the transfer. Of the three modes of operating—by ligature, by the knife, and by the écraseur—Mr.

Cooke had no doubt that the knife was the most desirable. He had seen some very bad results from the use of the écraseur. *Local and constitutional treatment* was of the utmost value in the malignant as in the non-malignant affections of the tongue. In the latter class a cure was always to be effected, while in the former much relief from suffering was to be obtained; and in some instances the disease had been arrested in its progress. Lotions of chlorate of potash, sulphate of copper, borax, etc. were commended, together with the internal administration of the mineral acids, bark, iron, and cod-liver oil."—(*Ibid.*)

"*Delay in Acquiring the Use of Language, supposed to be due to Tongue-tie, but probably to Imperfect Mental Development.* By Dr. Frank H. Hamilton.—A little girl, four years old, was brought to the clinic by her mother, who said she did not speak as distinctly as other children of her age, and she thought that she was tongue-tied. The child looked intelligent, had nursed well when an infant, and had always been well. On examination it was found she could project her tongue beyond her teeth and lips half an inch, which fact Dr. Hamilton regarded as sufficient evidence that the condition of the frenum linguæ did not interfere with her articulation. Raising her tongue, the frenum was seen to be normal in its dimensions. Dr. Hamilton took this occasion to make the following remarks: There are two periods of life at which children will be brought to you to have the frenum linguæ cut. Soon after birth, when it is found that the child does not nurse well, or at all; and from the third to the seventh or tenth year, when a delay occurs in the acquisition of language. In the first of these examples, the parents or friends seldom fail to attribute, as a cause of the refusal or inability to nurse, a shortness of the frenum. But you must remember that a child may be unable or refuse to nurse because it is feeble, or has a sore mouth, or has been kept too long from the breast, and hence lost the instinctive faculty or desire; it may be owing to the mother's milk being distasteful, or to its not flowing readily, or the nipple may be too small or contracted. Indeed, it is my opinion that some one of these causes will explain most of these cases. I am certain that I have never been able to trace it to a malformation of the frenum. I have cut the frenum occasionally to gratify the parents, but I am not aware that it ever did any good. Some gentlemen are of the opinion that, if the tongue cannot be lifted freely from the floor of the mouth, or projected beyond the lips, the child cannot nurse. I think this is an error. The tongue can grasp the nipple without being either protruded or lifted from the floor of the mouth; by mere contraction of its muscles it can be sufficiently thickened, and made to swell upward toward the roof. I am skeptical, therefore, in relation to the benefit supposed to be derived from cutting the fillet for this purpose. I do not speak of adhesions of the tongue to the floor of the mouth, but only of malformations of the fillet. In the second class of cases, also, I am equally skeptical in relation to the effect of this frenum in preventing distinct articulation, or even in producing lisping or stammering at a later period of life; but I wish especially to speak of its supposed influence in examples of delay in the acquisition of language, or of indistinct and imperfect articulation.

"The causes of this delay are, according to my observation, deafness, partial or complete, in consequence of which instruction in sounds cannot be communicated to the child; or idiocy, partial or complete. Perhaps in some few cases other causes, such as being kept at play with children who are much younger, and who do not themselves speak distinctly, or a peculiar quiet and non-loquacious temperament; but in no case have I been able to convince myself that it was due to the frenum. When it is due to deafness or well-marked idiocy, the parents pretty soon make the discovery of the true cause. The examples of which I wish particularly to speak, therefore, differ from either of these. I have met with them quite often, and of some of them I have made notes, which I will give to you. I think they are all examples of slight impairment of the intellectual functions, but in which the mind is not so much impaired as to discourage a hope that language will be acquired, and the child eventually show as much intelligence as other children. It is very important to make out these cases clearly, because they usually demand only that the parents should take unusual pains to instruct the children; and especially as we may, in a great measure, relieve the anxiety of the friends by assuring them that it is not likely to be permanent. I have heard it said of a distinguished physician of my acquaintance, that he did not speak a word until he was seven years of age."—(*Amer. Med. Times.*)

"*On the Amounts of Lead contained in Some Silver Coins.* By Eliot and Storer.—The determination of the amount of lead in American silver coin was suggested to the authors by finding half of one per cent. of lead in a sample of zinc such as is used at the United States mint for reducing chloride of silver. (See their Memoir on the Impurities of Commercial Zinc, in *Memoirs Amer. Acad.*, N. S., viii. 61; also this journal, 2, xxxi. 142.) For the sake of comparison, other coins were subsequently examined.

Kind of coin.	Per cent. of lead in the coin.
1 American half-dollar of 1824	0·310
20 " five-cent pieces of 1853	0·209
10 " ten-cent pieces of 1854	0·228
2 " twenty-five-cent pieces of 1858	0·231
'Fine silver' from the U. S. Assay Office in N. Y., 1860	0·161
1 Spanish dollar of 1793, Carolus IV	0·056
1 Mexican dollar of 1829	0·043
2 English shillings of 1816	0·485
1 French five-franc piece of 1852, Napoleon III	0·428

"On the supposition that the zinc used in the reduction of the silver is the source of the lead in the American coin, the authors calculate the amount of lead which would thus find its way into the coin. Their memoir, already cited, gives the per cents. of lead found in two specimens of Vieille Montagne zinc; if zinc of the best quality (containing 0·292 per cent of lead) had been used, the silver coin would have contained 0·158 per cent. of lead; if the second quality (containing 0·494 per cent. of lead) had been employed, the coin would have contained 0·268 per cent. of lead. Between these two limits all their determinations of lead in American silver coins lie. In offering this explanation of the occurrence of lead in American silver coin, the authors would by no means affirm that the zinc is the exclusive source of this impurity, for it is not at all improbable that a portion of the lead is derived from the leaden vats in which the reduction of the chloride of silver is effected, or from the sulphuric acid which is used to excite the reaction. The process of analysis was such as to permit the separation of the gold contained in each kind of coin. A distinct button of metallic gold was obtained in every instance before the blowpipe, but the amount of gold varied to a considerable extent; it was abundant in the American and Spanish coin, less was observed in the English and Mexican, and but little in the French coin or in the American fine silver. Brüel has remarked 'that the process of separating lead and silver was less perfectly executed in the ages of antiquity than is at present the case,' (*Karsten u. Dichens Archiv für Mineralogie, etc.*, 1844, xviii., 509;) yet in none of the recorded analyses of ancient silver coins has any one detected so large an amount of lead as the authors have shown to occur in American fine silver of the year 1860, if a single analysis of Professor Draper's be excepted, which gave nearly three per cent. of lead in a silver coin of Hadrian. It is probable, however, that the methods of analysis (none of which are recorded) employed for separating lead from silver by other chemists were less delicate than those which the authors made use of and have fully described. The occurrence of lead in the American silver coin could probably be mainly, if not altogether avoided, by employing zinc free from lead, such as is produced at the zinc works of Bethlehem, Pennsylvania. It is noteworthy that the American system of amalgamation, which has been so frequently criticised by European metallurgists, affords silver which is less strongly contaminated with lead, and is probably purer in other respects, than is produced by any other process of manufacture.—*Proceedings of the American Academy*, V., 52, Cambridge, September, 1860."—(*American Journal of Science and Arts.*)

Infant Feeding and its Influence on Life, or the Causes and Prevention of Infant Mortality.—In the course of a complimentary notice of an English work on this subject by Dr. C. H. F. Routh, the *Med. Critic and Psychological Journ.* gives the following interesting extract therefrom: "The whole analogy of comparative anatomy proves that all young animals require animal food for some time after birth, because this, or some adventitious animal structure, is generally supplied by the parent. The infant itself is so anatomically and physiologically made as to be capable of digesting animal food only.

"In many species of mollusca, and especially in gasteropoda, in many insects, and among the batrachian reptiles, the mother produces, together with the egg, what is called a nidamentum, which nourishes it for some time after its birth. Certain insects even feed upon the external envelopes which surround them, as in the case of the *stratismys chameleon.*

"The yellow substance which surrounds the abdominal parietes in some animals, or which is inclosed in the central abdominal cavity, is an auxiliary of this kind. Its presence explains the fact that spiders and snakes, for instance, remain some time after birth without requiring any other kind of food. The raw food which the greater number of birds give to their young is exclusively animal; hence the more readily obtainable and digestible. The northern ducks and the petrels, with their nests situated on high rocks near the sea, easily procure this food, and they always return to their nests richly laden with fish. The sparrows nourish their young with insects and worms, which they find everywhere in abundance; and hence certain rapacious birds, which require a greater amount of animal food for their young, become at the breeding season particularly audacious in order to procure it.

"Some of the sparrow and crow tribe bring the nourishment in their beaks, emptying it into those of their young. The rapacious birds, on the contrary, bring it in their claws, place it before their young, and tear it in small pieces for them. The heron and the pelican bring the fish in the pharynx, which is dilated to a large pouch below the bill; and the pelican applying its lower jaw against its own breast, allows its young to eat out of this pocket as out of a plate. Among some species of vultures and dark-winged eagles the crop seems to serve as a reservoir for the food intended for the young. Approximating to a higher degree of maternal co-operation, the female does not give nourishment to her young till she has in part digested and assimilated it. The bees and wasps are of this class, and swallow some pollen, and then disgorge it mixed with honey. Among pigeons, the greater number of *grallatores*, some *palmipedes*, and many sparrows, the mucous membrane of the œsophagus is dilated into a crop, well supplied with vessels, into which the grain which is difficult to digest is first conveyed, and then softened under the chemical influence of a fluid analogous to the gastric juice of the stomach. When half digested, and converted into a kind of chyme, it is subsequently disgorged into the beak of their young. This modified chyme it is which is popularly called pigeon's *milk*. The male assists in this operation as well as the female. Finally, in mammalia we arrive at the production exclusively by the mother, of milk, which bears in its composition considerable resemblance to the diluted yolk of egg, and in some respects to the nidamentum. It will be seen from the preceding review that the food which is required by the young is essentially animal; and in those cases even where the birds themselves are granivorous, or vegetable feeders, they either supply their young with animal food exclusively, or else with vegetable food so semi-digested in, or so intermixed with the animal fluids, that for all purposes it may be regarded as animal food.

"Gradually as the young animal becomes older, this exclusive dependence upon the maternal supply ceases. Among pigeons, for instance, after three days the young bird begins to partake of other food also. The reindeer, at the end of some days, begins to eat grass and lichens; and the calf in about three weeks can no longer live exclusively on its mother's milk, but requires other food. Still the dependence of young animals upon the food which they directly obtain from the mother in the natural state is very close. In the case of the *simia rhesus*, that animal attaches itself to its mother's nipple, and remains in this position for fifteen days, in sleeping as well as waking, never leaving one breast but to attach itself to the other. To endeavor, therefore, to nourish any young animal exclusively on vegetable food, is contrary to the entire law of nature, and especially so in man, where the parental relations are so much closer, and maintained for so much longer a period."

MISCELLANY.

The communication of "A Dentist," on the doubtful propriety of employing a preparation of mercury for coloring coralline, has elicited the following replies through the *Lancet*. Thus, in relation to the probable deleterious effects of this agent when thus combined, "F.R.C.S." says: "I have a patient who has worn the vulcanized india-rubber cases about five months. For three months she has been under treatment, in consequence of anomalous pains about the head, face, and clavicular regions, with difficulty of swallowing, and pain in the throat after deglutition. The patient has lost nearly all her hair, and complains of pain on attempting to empty the bladder. Quinine, arsenic, iodide of potassium, etc. have been in turn administered, but without any permanent relief. It will certainly be interesting to know if any other practitioners have met with similar symptoms where the vulcanized india-rubber cases have been worn."

Per contra, Thos. H. Harding states: "I have been at some pains to inquire and to find out whether the coloring material in the vulcanized india-rubber is in any way deleterious. I have treated nearly two hundred cases with this basis for artificial teeth, and have not known a *single* instance wherein the slightest ill effect has been produced by its use. I am in the habit of giving to its surface a very fine polish, which cannot in any way be affected by the fluids of the mouth. I have a plate before me made from it, which has been in use for a year, and a close examination shows that it is not decomposed, corroded, nor in any way altered by the fluids of the mouth. It is known to be most endurable and lasting, and far preferable to the bony lower plates that we were once in the habit of employing, which actually underwent decomposition, became very offensive, and no doubt produced such symptoms in many instances as are described by 'F.R.C.S.' in the *Lancet* of the twenty-seventh of April. I am at a loss, however, to understand how the vulcanized india-rubber can be looked upon by him as the cause of the peculiar symptoms which he describes, and commencing only two months after use. It cannot affect the saliva, because it is not acted upon by this fluid. I am rather disposed to believe that some other cause altogether has been at work, exaggerated, may be, by a misfit, which will at times produce any amount of irritation. One of the best signs of the value and utility of the vulcanized india-rubber is the manner in which it is becoming appreciated, both by the profession and the public."

In noticing the different forms of quackery existing in Paris, the correspondent of the *Lancet* from that place makes the following statement respecting dental empiricism: "At Chaillot, in the vicinity of the Champs Elysées, a whole convent of nuns officiate as the recognized dentists of the poor, and the wondrous crunching of the jaws of the multitude which daily ensues, gratis or thereabouts, is something too appalling."

In relation to the same subject, the Prussian correspondent of the *Med. Times and Gazette* affirms that "every year, on the feast-day of the holy Apollonia, crowds of peasants throng to the cathedral of Bonn, to seek relief of the toothache through the intercession of the saint, the cure of this ailment being her specialty."

In the report of the proceedings of the London Path. Soc., (*Med. Times and Gaz.*,) it is stated that Mr. Spencer Wells presented "a tumor and portion of the lower jaw removed by excision, a week before the meeting, from a female patient twenty-seven years of age. Photographs of the patient, taken before the operation, were also exhibited. The tumor had been of four years' growth, but had only grown rapidly during the last twelvemonth. About a month ago Mr. Hulme had extracted a tooth, bringing with its root a portion of the tumor; which portion, on examination, proved to be purely fibrous. It was determined, therefore, to remove it, with the portion of jaw implicated; and Mr.

Wells, after exposing it by a single incision along the base of the jaw on the left side, divided the bone close to the symphysis and near the angle, and thus removed the whole of the disease. The patient had gone on remarkably well, the incision having nearly all healed by first intention.

"DR. COPLAND remarked on the great improvements in modern surgery. Not many years ago the removal of such a tumor would not have been contemplated."

In a letter from Edinburgh to the *Amer. Med. Times*, DR. D. P. SMITH relates the following, among other interesting matter: "A case of tumor in the lower jaw was next shown, solid, not malignant, but incurable except by operation, and slowly growing. By careful examination it was ascertained to be growing from the jaw-bone, and not from the alveolus. In connection with this case, Mr. Syme mentioned the case of a young lady from whose lower jaw he removed a similar growth. Although he supposed he had removed all materies morbi, it returned. He again removed it, and it again returned, and it was not until he had disarticulated and removed one whole side of the lower jaw that the disease was permanently arrested. Thus a guarded prognosis must be given in these cases. He would make incisions along the base of the jaw, and avoid cutting through the lip."

The *Chemist and Druggist* gives the following in a notice of some new inventions: "Rostaing's compounds of gutta-percha for dental purposes do not appear in any respect superior to those hitherto in use in this country. They are formed by adding powdered blende, oxides of zinc, and a preparation of tannin to purified gutta-percha. The utility of the latter addition we much question, as we are not aware that tannin has the slightest action on the gutta-percha."

According to the *Mining Chronicle and Chemical News*, the "oxide of chromium, when reduced to a fine powder, is one of the best reducing and polishing substances for metals known, and which, we think, is even superior to the finest emery for polishing steel. The best iridium-pointed gold pens become useless when used for writing signatures for a few hours over the green chrome ink that is printed on bank bills."

The *Sci. Amer.* thus notices an improvement in electro-plating: "The electric current employed in electro-plating is usually derived from a galvanic battery composed of platinized negative and amalgamated positive zinc plates. All such batteries are disagreeable to use on account of their offensive odor, and they are defective in action on account of the want of uniformity in the current, caused by the decomposition of the most oxidizable plates. A superior substitute for the battery, possessing the qualities of cleanliness, convenience, and constancy of action, has long been sought by men of science and others. This at last appears to have been obtained in an improved magneto-electric machine invented by Mr. George M. Beardslee, which we examined a few days since at College Point, L. I., in the establishment of Conrad Poppenhensen, Esq., of No. 44 Cliff Street, this city. It only occupies one cubic foot of space, yet it plates from five to thirty square feet of copper surface with a beautiful and tenacious deposit. The specimens of plated work which we examined were not mere experimental samples, but copies of medals, line engravings, etc., belonging to the establishment of Messrs. Smith, corner of Canal and Centre Streets, this city, who are now doing their plating with this small machine as a superior and economical substitute for several batteries."

The *London Builder* states (*Ibid.*) that "M. Bru, curator of the museum at Narbonne, has discovered that silicate of potash possesses, in the highest degree, the property of uniting surfaces of stone, glass, and pottery. It is applied with a brush to the surfaces which it is desired to bring into contact, and in a few days acquires a great solidity. It appears that the same material can also be successfully used in joinery, and for all the purposes to which common glue is applied. This discovery, which promises to be of considerable importance, was announced by M. Bru to M. Figuier, the editor of *L'Année Scientifique et Industrielle*, the volume of which work for the present year contains, at page 481, a paper on the subject, and a letter from M. Bru to the editor."

In reply to a correspondent, the *Sci. Amer.* says: "The composition employed by blacksmiths for welding cast-steel consists of five ounces of borax and half an ounce of salammonia pounded together, then fused in an iron vessel, and poured out in a cake and cooled. It is now ground to powder, and in this condition used for welding. The steel is now raised to a yellow heat in a clear fire, then rubbed with some of the powder, which should be kept upon a stone on the hearth; then the steel is again treated as before, and is fit to be placed under the hammer. Iron and steel may be welded together with this powder by carefully managing the heat of each."

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The function of medical men in war, as in peace, is to prevent and remove disease and preserve life. For the successful performance of this duty in both instances, a knowledge of those important branches of medical science—hygiene and therapeutics—is indispensable. Fortunately our country has heretofore been so highly favored as to limit the application of this knowledge more exclusively to a civil than a belligerent state of society. But now that that exponent of barbarism—war—is upon us, it is an imperative duty to concentrate our attention upon the various means necessary to mitigate its dreadful evils, and promote the cause of law, order, civilization, and progress. The little work above named is therefore very seasonable in supplying much useful information upon the important subject of military medicine, and hence is well adapted to the more immediate wants of those who have not made it an object of special study.

Summary of Medical Science. Edited by Walter S. Wells, M.D. —This is an American publication, on the same general plan of those well-known English serials, Braithwaite's Retrospect and Ranking's Abstract. Its special design is to present "a semi-annual digest of the essentially practical articles embraced in the principal European and American medical journals, together with contributions from eminent surgeons and physicians." Each part will contain about 300 pages of closely-printed matter, classified and paged for convenience in binding under special heads. It will be published in New York on the first of April and October, at $1 25 per part, or $2 per annum, in advance.

THE

DENTAL COSMOS.

NEW SERIES.

VOL. II. PHILADELPHIA, JULY, 1861. No. 12.

ORIGINAL COMMUNICATIONS.

PRACTICAL HINTS.

BY J. D. WHITE.

IN the last number we promised a continuation of the subject of the tidiness of the dentist. The dress is the next thing which a dentist should pay some attention to. It is not a good plan to wear such material, especially in warm weather, that cannot be washed frequently, as the perspiration affects the dress of any one more or less, and, besides, it becomes soiled. The underclothes of the dentist, in summer, should be changed more than once a day. The toilet should be neat and clean; never wear your dress until it looks like *Saturday night*, nor select material that will not show the dust. We think that white for a coat and vest is best, as it looks well when clean, and is not out of character in this country. The hair should receive some attention; it should not be so long as to fall out of place in leaning down; but we do not approve of the short "clip" of the present day. It is vulgar to keep up a constant slinging of the head to keep the hair out of the eyes, or to be running the fingers through it all the time to adjust it. Never scratch the head or the person in any way, or stand with the hands in the pants pockets while talking or in the presence of the patient. Hawking and spitting, or using the handkerchief in the same room with a patient is not good breeding, or using the same spittoon. These may appear small things, but they deserve attention. Every patient, young or old, rich or poor, if you operate for him at all, should be treated with deference and respect.

A dentist's instruments should always be kept clean, as a matter of course. A mug of water and short brush, similar to a nail-brush, should be kept, independently of the tumbler of clean water, for brushing the files as fast as they are used. The rest of the instruments will be washed at the washstand. Never lay instruments down with blood on them; they should always be kept bright. A dentist should never let his instruments get in such condition as to attract a remark from his patient; and if a remark as to his instruments should ever come from any one, when he knows all is right, from over-fastidiousness, get rid of him, as he will find frequent opportunity to annoy you.

Never try to prove to a patient that his tooth is not in a condition to plug, by the smell of the cotton you remove from it, however much it may be an aid to you in diagnosis. It is bad manners to let the patient know it, or to let him know that you regard it as a sign. We avoid the use of disagreeable terms under all circumstances, when speaking of the condition of a tooth, nor do we allow a patient to put words of the kind in our mouth. If he attempts it we always scrupulously avoid adopting them, and employ our own. We expect every one to employ such terms as not to keep up a disgusting idea between his own mind and his patient's during the time of operating for him.

We have, ever since our first entrance into the profession, regarded it as best to wash our hands in the presence of the patient, and we are glad to see that it is the opinion of our much-esteemed coeditor and former pupil, Dr. McQuillen, in whose judgment we have the utmost confidence. Our patients should see for themselves that we indulge freely in *clean water*.

(To be continued.)

Entered, according to Act of Congress, in the year 1860, by Jones & White, in the Clerk's Office of the District Court for the Eastern District of Pennsylvania.

TREATISE UPON THE GENESIS AND DEVELOPMENT OF THE DENTAL FOLLICLES TO THE EPOCH OF THE ERUPTION OF THE TEETH.

BY DRS. CH. ROBIN AND E. MAGITOT.

[Translated for the Dental Cosmos, from the "*Journal de la Physiologie de l'Homme et des Animaux*," Dr. E. Brown-Séquard, editor, by E. Sureau.]

d. Secondary particularities of the tissue of the dental bulb.

Near the commencement of the production of the dentine, the bulb becomes the seat of some interesting particularities. Small masses of calcareous substance appear in the body of the organ; they are usually spheroidal, and the diameter may reach five or six hundredths of a millimetre.* These small masses are very brilliant, and have an index of refraction, resembling that of drops of oil. Their number is very considerable near the time of birth, that is to say, in the midst of the labor of dentition; they are entirely insoluble in alcohol, ether, and sulphuret of carbon, but hydrochloric acid bleaches them and renders them granulated, without completely dissolving them. This chemical reaction, in addition to the physical characters which they exhibit, demonstrates sufficiently that they are constituted by the phosphate of lime, already combined with the azoted matter, which is unfavorable to their dissolution in hydrochloric acid.

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* These grains have already been pointed out by Purkinje and Raschkow in the pulp of the teeth of the hare, hog, and deer, (Raschkow, *loc. cit.*, 1835, p. 5,) and by Henle in that of the teeth of the adult man, (Henle, General Anatomy.)

These calcareous grains are found, however, in the body of the bulb-tissue during the whole period of its existence. In man they are found disposed at irregular intervals through the whole length of the radicular part of the bulb; there are some here and there in the coronal part, generally nearer to its surface than to its centre. They are irregularly spherical, or ovoid and mammillated at their surface.

This curious production of calcareous masses, which we have found in the dental pulp of ruminants and rodents, appears to be owing to an exaggeration of the nutritive movement, with a considerable afflux of calcareous materials, which, being more than sufficient for the dental formation, one part is disposed in the body of the bulb in amorphous masses. This explanation is the more probable, as in conjunction with the existence of these calcareous masses there are deposits of hematoidine, either amorphous and infiltrated, or crystallized in tufts and needles, (pl. v., fig. 1, *f*.) This new circumstance can also be explained by an exaggeration of the nutritive movement and a very considerable sanguineous afflux. These two phenomena are often presented to our observation, and appear, if not always, at least very frequently, in the period when the work of dentification is in full vigor.

Having exhibited the structure of the bulb in the various periods of its existence, we may now examine the office which it fills in the production of the teeth.

§ 2. *Origin and development of the ivory.*—PRELIMINARY—OF THE PRECISE PLACE AND TIME OF THE APPEARANCE OF THE DENTINE.—In the examination of a series of microscopic preparations, showing the follicular apparatus at the different periods of its evolution, there occurs a moment when the attention of the observer is arrested by the presence of a new part, which is less transparent than the others, and occupies the summit of the bulb of certain determined follicles. The attention is arrested especially by the circumstance that, instead of being clear and transparent, the summits of these bulbs exhibit a blackish tint, darker than those of the neighboring bulbs, and are themselves bounded by a very narrow, clear line, owing to a particular phenomenon of refraction of the light. An attentive examination of this dark part, and the dissection of the follicles where it is found, will show that it is formed by the ivory, and that it constitutes the first cap of dentine which appears in each follicle. In examining the constituent parts of the latter from the base to the apex, the bulb is seen to be successively surmounted by one or two caps of dentine, according to the species of tooth; the cap adheres intimately to the bulb, and when the follicular wall is broken in the preparation, with dislocation of the different parts of the follicle, the cap brings the bulb away with it. Immediately above the cap, and easily separated from it, is the organ of the transparent enamel with its bed of cells already frequently adhering to the ivory; and, finally, the whole is surrounded by the follicular wall.

It is the examination of this new part appearing at the heart of the follicle which has led us to the precise determination of the epoch and manner of the first appearance of the cells of the dentine and of the dentine itself.

The birth of this first cap of dentine is one of the most interesting phenomena in the study which we are now pursuing; it gives precision to the determination of the nature of all the parts of the follicle, and assists the examination of the ulterior phases of the evolution of the bulb.

In the human fœtus, as has been already stated, the production of the first bed of ivory occurs from the eightieth to the eighty-fifth day after conception. This appearance does not take place indifferently on any one of the follicles of the temporary teeth existing at that time: the first cap of dentine appears, at the time indicated, upon the summit of the bulb of the middle incisor; the second is developed on the most projecting tubercle of the first molar, and about one week after the appearance of the dentine cap of the first incisor; while that of the second incisor, on the contrary, appears a week after that of the first molar; and then follow, at nearly equal intervals of time, the ivory caps on the bulb projections of the second molar and the canine.* This order is nearly a repetition of that which governs the appearance of the follicle in the intra-uterine life, and the irruption of the teeth of the first dentition. Therefore the order and time of the origin, as well as the successive phases of the evolution of the follicles, of the parts which contain them, and consequently the tooth itself, are governed by the same regular and constant law.

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* According to Meckel, the order of the appearance of the caps of dentine (points of dental ossification) are as follows: 1st, the internal incisor; 2d, the anterior molar; 3d, the external incisor; 4th, the canine; 5th, the posterior molar. (Meckel, *Beitrag zur Entwicklungsgeschichte der menschlichen Zähne. Archiv für die Physiologie.* Halle und Berlin, 1817, 8vo., vol. iii. p. 563.) It is evident, indeed, that the canine sometimes shows a cap of dentine before the posterior molar; in the hog, in particular, it appears before or at the same time as that of the posterior molar. Meckel had already noticed that each follicle, or dental sack, originates of itself in the hollow furrow of the jaws, at the heart of a lax and very vascular, common cellular tissue, (p. 556.) In the fœtus of ten weeks he counts four follicles, two anterior incisors, and two more voluminous posteriors, separated from the others by a free space. It is at the end of the second month that he makes the fifth follicle appear between the two preceding pairs, (p. 559–560.) We have seen that this is not altogether the order of their appearance. He admits, with Blake, (*On the Structure and Formation of Teeth,* Dublin, 1801, 8vo., p. 1,) that the follicle of the first permanent tooth appears near the fourth month. He believes, incorrectly, that in the beginning the follicles are full of liquid, without any trace of bulb or germ, and that the latter appears at the commencement of the fourth month of the intra-uterine life, and that it always appears simple, and not in several separated portions which afterward unite, and that even in the teeth where the crown commences by many distinct *osseous points,* (p. 560–561.)

We have been able to assure ourselves, by a particular examination of a fœtus of one hundred and twenty days at most, and of a total length of twenty-two centimetres, (8·6 inches,) that the cap of dentine of the second molar only makes its appearance at that epoch; that is to say, three weeks after the appearance of the dentine cap of the first molar, and fifteen days after that of the second incisor. At this period (one hundred and twenty days) the dentine cap of the canine is not yet formed, but the condition of the cells which are seen at the summit of its bulb indicates that it must appear a very few days afterward, consequently from the one hundred and twentieth to the one hundred and twenty-fifth day. It results, therefore, that the appearance of all the caps of dentine is completed between the one hundred and twenty-fifth and the one hundred and thirtieth day. It must be noticed, besides, that at this moment the first dentine cap which appears (that of the great incisor) already covers the whole extent of the projecting edge of the bulb. This cap, reproducing the wedge-shape of the bulb-edge which it covers, presents, like this edge and the future crown, three small projections, separated by two slight depressions. That the middle projection is the first to appear, is proved by the greater depth of the dentine at this level, and its comparison with the uni-tubercular cap that is seen near the middle of the bulb-edge of the second incisor, which does not yet cover the whole summit of the bulb. At this period of one hundred and twenty days the dentine cap of the first molar is only twice as large as it is at the ninetieth day, and about four times larger than the cap which is just appearing on the bulb of the second molar. It still covers only one single bulbular projection. The preceding particularities relate to the follicles of the lower jaw. We have learned from examination that they are completely reproduced in the upper jaw, with the difference that the development of the caps of dentine is a little less advanced by some days at most. The first appearance of the ivory is here a little more retarded. This circumstance has been demonstrated in particular by the fact that the cap, which has been shown to exist on the second inferior molar at the one hundred and twentieth day, has not yet appeared on the corresponding superior follicle.

The point of the first appearance of the dentine is always unique in each follicle. In the follicles of the teeth styled uni-tubercular, (incisors and canines,) this point occupies the middle of the trenchant edge of the bulb, and extends from there on all sides, following an undulated direction, in the case of the incisors, and a regular direction in the canine.*

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* These undulations, which are preserved in the trenchant edge of the incisors for a considerable time after irruption, are of a nature to demonstrate that, like the

The development of the dentine cap in the molars commences by the appearance of one opaque point at the summit of the most projecting tubercle. The other caps of dentine are produced shortly afterward at the summit of the various bulb-projections; and it is by the progressive enlargement and mutual union of these partial caps that the single cap is formed, which soon covers the multiple summit of the bulb.

We now know at what period of fœtal life, and upon what point of the follicle, the ivory primitively appears, and we also understand the phenomena which, in a general view of the follicle, characterize the production of this new part. It now remains for us to determine what are the anatomic elements which constitute it; the precise place and method of the genesis of these; in what manner they unite in order to form each cap of dentine; and what are the successive phases of the evolution of the latter.

a. Genesis of the cells of the ivory.

The anatomic elements which, by an ultimate phase of their evolution, constitute the first bed of ivory formed at the summit of the bulb, belong to the class of *cells*. These elements possess particular specific characteristics which are found with slight differences in the whole series of vertebrated animals with teeth, or organs formed of dentine, as the pectines of many of the plagiostomi.

The cells of the ivory do not originate precisely at the exterior surface of the bulb, but rather in the body of the bed of homogeneous and transparent amorphous matter, which has been shown to exist in the superficial part of the bulb through the whole of its free part. When they originate these cells are inclosed, as they are during the whole period of their development, in the substance of the bulb, so that the most superficial part of the amorphous bed (*membrana præformativa*) extends at

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molars, the incisors and their bulbs are multi-tubercular, with the difference that the divisions of the incisors continue rudimental, and are worn away more rapidly in the course of life than those of the molars. The projections of the incisors, which are three in number, are, besides, reproduced more developed and permanent in certain species, (carnivora,) so that, of all the teeth, the only one which ought to be considered as absolutely uni-tubercular is the canine; and this is the case in all the mammifera which have teeth of two or three kinds. This fact corresponds with the presence of a middle projection and two smaller ones at the lateral angles of the edge of the bulbs of these teeth—these projections have been pointed out in a previous part of this article as continuing after the complete evolution of the incisors, through the whole duration of the bulb, and are met, when we remove the latter from its cavity, in the form of very small conical papillary projections, the middle one of which is often more slender, but longer, than the two lateral ones. In man and the ape they are placed at the same level, the edge of the incisors being nearly horizontal, but in the carnivora the two laterals are lower than the other on the sides of the adult bulb.

most from four to five thousands of a millimetre beyond the peripheral extremity of these cells.*

Two phenomena can be distinguished in the genesis of the cells: 1st. The genesis of the nucleus. 2d. The genesis of the body of the cell itself, the substance of which will be grouped around the first formed nucleus.

Several nuclei always appear simultaneously; they are arranged beside each other in one even range. They are in the shape of small, ovoid bodies, transparent, but a little darker than the amorphous matter in which they originate, and their outlines, although very pale, are very clear. The nucleus, at the time of its appearance, is from about five to six-thousandths of a metre in length; it lengthens considerably, but also widens so rapidly that it is soon almost spherical. It is but slightly granulated at the time of its appearance, but quickly becomes so, and in a very short time one or two small, spherical, brilliant nucleoles can be seen in its body. It must be remarked, however, that the production of the nucleole is more generally subsequent to the origin of the body of the cell itself.

A small quantity of a lighter-colored, finely-granulated substance is grouped around the circumference of the nucleus, principally at the extremities of its greatest diameter; it soon gives the whole of the element an elongated cylindroidal form, quite clearly cut at the two extremities, so long as the ivory is not formed. This new substance has a diffused outline at first, but becomes isolated gradually with the nucleus and almost invariably accompanies it, even when the elements are set at liberty by the dilaceration of the summit of the bulb. It is then very clearly proved that these elements, thus completed, are really of the cells, and that the nucleus very rarely occupies the centre, but rather one of the extremities, which always has a wider or more clearly cut edge than the opposite extremity.

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* When we have found the precise point of the bulb where the genesis of the cells of the dentine takes place, we also know the point where the proper tissue of the tooth originates, since the ivory proceeds directly from these cells. Meckel thought he had proved, in opposition to the opinion held by his predecessors, that the proper substance of the teeth is formed *upon* and not *in* the germ, (*loc. cit.*, 1817, p. 565.) Purkinje and Raschkow (*loc. cit.*, 1835, p. 7) say that the dental tissue is disposed between the germ and the *membrana præformativa*, and that the latter afterward becomes ossified. Schwann, the first, (1838,) described the *cells with nuclei of the* dental pulp or of the ivory, and considered the proper substance of the teeth, interposed between its canaliculi, as growing probably by the ossification of these cells. He and Henle regard them as placed below the *membrana præformativa.* These cells have since been described by all the authors. The prolongations or tails were shown by Kölliker, and afterward by Lent, (1852.) Kölliker is wrong in representing them as having generally two, three, or even four nuclei, (*Mikroskopische Anatomie*, Leipzig, 1852, 8vo., vol. ii. pp. 97 and 98;) this fact is rare, even in dogs. He has delineated the cells of this animal.

The ulterior phenomena of development of the cells consist of an enlargement in every direction, the increase in length being greater than the increase in width. Most of the cells are nearly prismatic, or more or less irregularly conical. The extremity which is turned toward the bottom of the bulb is the one occupied by the nucleus. The peripheral extremity, or the one nearest the surface of the bulb, is quite clearly cut so long as there is no ivory formed at the summit of the bulb; but when we take them at the internal or adherent face of the dentine caps, near their edge or near their centre, the peripheral extremity, or that turned against the ivory, is narrower than the other, and is elongated into a filament, which is more or less long, transparent, pale, sometimes bifid, and varying in extent from the length of the cell itself to twice that length, and sometimes even more. The cell is uniformly and finely granulated; in some cells the granulations are prolonged into the base of the filament, but they usually stop at the point where the latter is attached. The water swells these cells a little, and has a tendency to make them more decidedly ovoid or spheroidal than they are before they come in contact with the liquid.* Alcohol contracts them, rendering them irregular without causing the disappearance of their nuclei, which also become irregular. Acetic acid bleaches the cells and softens them considerably; it bleaches the mass of the nucleus a little, the outline growing a little darker and sometimes a little sinuous. Glycerin bleaches the nucleus, and makes it disappear gradually in the course of some hours, without the form of the cell being much modified, but the granulations become extremely pale.

Such are the general characteristics of the dentinal cells in the mammifers.

We will now examine the differences and the various particularities of structure which distinguish the different elements from each other in the principal species of the domestic mammifers.

b. Characteristics of the dentinal cells in man and the principal domestic mammifers.

In man and the quadrumana, (pl. v., fig. 5,) the cells, when observed in a continuous range, affect a cylindrical or prismatic form by reciprocal pressure; under these circumstances it is difficult to study the characteristics of the cells, and the nuclei are rarely visible if glycerin is used in preparing them. When examined separately, they are generally prismatic; but their softness or the commencement of the cadaveric alterations causes many of them to become spherical, ovoid, or pyriform. They vary in length from two to four-hundredths of a millimetre; and the width, when not altered, is from seven-thousandths to one-hundredth of a millimetre. The outline of the cell is extremely pale and the contents granulated, but also very pale. Almost all of them contain a nucleus which is very dark, and large in proportion to the body of the cell; it is ovoid or spherical, and the diameter is generally from six to eight-thousandths of a millimetre, sometimes reaching one-hundredth, so that it occupies the entire width of the cell, even extending beyond its edges. Sometimes half of the contents is found in the body of the cell, while the other half projects outside; the extremity containing the nucleus is sometimes widened in order to receive it, and the narrower opposite extremity is occasionally terminated by a filament or tail, and is much more transparent, because the granulations are congregated on the side which contains the nucleus. The filament, which is seen on a certain number of the cells at the extremity opposite to the nucleus, is extremely pale, glassy, and entirely without granulations. It tapers into a point, and most frequently terminates in a very sleazy-textured extremity; occasionally, however, the extremity is slightly swollen in the shape of an ovoid ampulla. The presence of a filament at one end of the cell of the ivory is far from being invariable in man. When it does not exist, the cell is extremely pale at the point where it ordinarily originates.

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* A longer immersion in water also induces at the surface of the cells the production of very transparent vesiculiform ampullæ which project at their surface, (pl. v., figs. 6 and 7.) These ampullæ are extremely transparent, and have a very clear edge, a regularly rounded form, and a variable and gradually increasing volume. They are produced by the elevation of a portion of the substance which forms the surface of the cell, so that the wall of the ampulla is evidently blended with the rest of the surface of the cell. The finely granulated substance of the body of the cell is a little paler at the bottom of the ampulla and is not effused in the new cavity formed by the elevation of the superficial bed of the cell; this cavity is filled with an extremely limpid fluid.

In the carnivora, (pl. v., fig. 6,) the cells of the ivory bear the greatest analogy to those of man; they are from three-hundredths to six-hundredths of a millimetre in length, and from eight-thousandths to eleven-thousandths of a millimetre in breadth. The outline of the cell is pale and diffuse, and the contents are formed of very pale and very fine granulations. The ovoid or rounded nucleus occupies one extremity, and contains one, two, or three very brilliant nucleoles. Filaments or tails do not occur very frequently, and when they do exist, always occupy that extremity which never contains the nucleus. They are regularly conical or sinuous, much paler than the contents of the cell, and almost always entirely without granulations—these ending in the cell at the place where the filament is inserted. The latter is of variable length, simple, very rarely bifid, and may reach the length of the cell itself.

In the ruminants, (calf, lamb,) (pl. v., fig. 7,) the cells of the ivory exhibit some remarkable particularities. They are generally ovoid, being from three-hundredths to seven-hundredths of a millimetre in length, and from one-hundredth to two-hundredths of a millimetre in width. They are always swollen near the middle, while the extremities are more or less contracted. The extremity containing the nucleus is sometimes a little tapering, but more frequently cut square, or slightly rounded at the edges. The nucleus often extends beyond the extremity, which is too narrow to contain it, and projects in part outside of it. The opposite extremity is provided with a simple filament, rarely double, and not exceeding half the length of the cell itself; it is fusiform, very pale, either straight or sinuous, and usually without granulations.

There are a certain number of cells, especially among those without filaments, which have an irregularly prismatic configuration. The nucleus is ovoid, from nine-thousandths to eleven-thousandths of a millimetre in length, with one or two comparatively large nucleoles and a dark outline. The granulations of the nucleus are very rare and very fine.

In the soliped pachyderms, (pl. v., fig. 8,) the dentinal cells differ but little from the preceding. Those of the horse are from three-hundredths to six-hundredths of a millimetre in length, the mean breadth being two-hundredths of a millimetre; the outline is very clear, and the contents are formed of quite large, but very pale, granulations. Almost all of them contain a nucleus, which occupies one extremity; the opposite extremity is provided with a filament, which is usually long, and occasionally reaches one-hundredth of a millimetre. It is most frequently rectilinear, sometimes bifurcated, and is always situated at the non-nuclear extremity. This filament exists almost invariably, and its particular characteristic is that, instead of growing by the gradual attenuation of the extremity of the cell, it disengages itself suddenly from that extremity. Sometimes, even, the nuclear end of the cell is terminated by a small point, a sort of rudimental filament, which is never half as long as the cell. In the solipeds, as we have seen, the differences in the configuration of the cells are more striking than in the other species. These differences affect the shape of the body of the cell and the disposition of the filament or tail. There are some cells, however, which have not this prolongation; in this case they are extremely short, as if crushed. It is not very unusual to find cells with two tails or filaments placed near each other, at the two angles of the caudal extremity. Sometimes, indeed, the filament is so short, or rather is disengaged so insensibly from the body of the cell, that its presence is only perceived by the absence of granulations in its interior.

In the hog, (pl. v., fig. 9,) the cells are quite different from those of the solipeds; they are smaller, being from four-hundredths to six-hundredths of a millimetre in length, and from eight-thousandths to twelve-thousandths of a millimetre in width. The general form of the cells resembles that in man, except that it is a little less regular. The cells rapidly become ovoid or cylindrical by cadaveric alteration. They are, for the most part, terminated by a filament, which is short, very rarely bifid, broad at the base, and provided with granulations in the greatest part of its extent. The outline of the cell is pale and whitish, and the contents granulated, but also very pale. A spherical or ovoid nucleus is found in the cell, situated at the extremity opposite to the filament, and containing a nucleole which is pointed and dark in some cases, and in others larger, with a brilliant centre. The nucleole is sometimes so brilliant as to warn the anatomist of the presence of the nucleus, whose pale outline at first escapes observation. Certain cells appear to be without any nucleus. It may be remarked that, among the slightly dark, grayish granulations which are sprinkled through the cell, some very brilliant ones are to be found.

In the rodents, (pl. v., fig. 10,) the only particularity which can be pointed out in the dentinal cells is their small size. They are short, and most frequently become ovoid very quickly, being from one-hundredth to three-hundredths of a millimetre in length, and from three-thousandths to five-thousandths of a millimetre in width. They are very transparent, the outlines are indistinctly marked, and they are filled with very pale granulations, in the midst of which the nucleus is very apparent, with its clear outline and brilliant nucleoles. Some rare cells have a filament or tail; but it is usually short, and never reaches a length equal to that of the cell itself.

(To be continued.)

AN ESSAY ON THE CIRCULATION.

Submitted to the Faculty of the Pennsylvania College of Dental Surgery for the Degree of Doctor of Dental Surgery. The Session of 1860–61.

BY THOS. C. STELLWAGEN.

In this paper I cannot lay claim to any discovery, or to the advancement of a new theory, it being merely an humble attempt to aid in the accumulation of evidence in favor of a theory already pretty generally received.

I must here acknowledge my indebtedness to numerous authors, from whom I have in many cases quoted freely, frequently using the exact words of the text, thinking that any modification or alteration would be worse than useless. Of these, permit me to mention the lectures bearing upon this subject delivered by the professors of the Faculty of the Pennsylvania College of Dental Surgery, the works of Mr. Tomes, an article in the Edinburgh Encyclopedia, Messrs. Todd and Bowman, Drs. Dunglison, Neill, Smith, Wilson, etc.

Buoyed by the hope that your cognizance of the severe course of study in which I am now engaged will be an excuse for any inaccuracies, this thesis is submitted to your most tender mercies.

Ever since the remote period of time in which flourished the great Aristotle, there have been constant differences of opinion as to the manner in which the blood, that great recreative and vital fluid of the body, is distributed to the various portions of the system, carrying in its tide strength and nourishment; supplying the material for reproducing broken-down tissue, which may have been destroyed by violence, or consumed by the constant daily wear of the actions of animated life,—thus sustaining and invigorating every portion of the beautiful and intricate structures of animal bodies.

Cut off the flow of this wonderful current from any part, and soon that which was healthy, strong, and in the full enjoyment of all its functions, will become reduced to a state of disease, which, if the cause be not removed, will result in the most certain and revolting decay and death of the part deprived of its support. A diminution of the proper supply will cause atrophy, which, in the limbs, may result in the entire loss of power and use of the member or members; in the case of the brain, be followed, in man, by the loss of the noblest faculty, reason, or produce death.

Thus a faint idea of the uses and importance of this fluid may be had, as it regards existence itself. The inquiry now arises, how could these wonderful uses of the blood be carried into effect, were it not for the delicate and peculiar arrangements and contrivances by which even its most diminutive streams are carried to the very remote and minute parts of the structure, thus diffusing itself through all the various fragile tissues of the body, by a ramification of rivulets and branches, in its outward course, connecting with filamentary pipes running into tubes and canals, furnished with locks and gates, gradually enlarging as they approach the heart?

Life has been happily compared, by anatomists, to a structure erected on a tripod—the withdrawal of either of the three great supporting powers must cause the overthrow of the whole fabric. The legs of this tripod being the brain, lungs, and heart—the last two are intimately connected with the circulation—the last of all being the main organ.

In order more ably to discuss this subject, it may not now be amiss to occupy a short portion of this thesis with a description of the blood, so that the utility of the peculiar vessels, organs, and tissues required for its diffusion may be more thoroughly comprehended.

Blood, according to Webster, is "the fluid which circulates through the arteries and veins of the human body, and of other animals, which is essential to the preservation of life." This definition of the term is not one calculated to satisfy the most humble scientific investigator, although familiarity with its appearance might cause some to consider it sufficiently minute.

This fluid is supposed to be a living organized body when first drawn, having a beautiful red appearance; feeling somewhat unctuous, of considerable consistence, peculiar smell, and slightly saline taste; specific gravity 1·0527. It is made up of red and white corpuscles, together with liquor sanguinis. According to Brande, the coloring matter is of an animal nature, being made up of water, fibrin, albumen, hydrosulph. of ammonia, soda, subphosphate of iron, muriate of soda, phosphate of soda, and phosphate of lime, besides benzoic acid detected by Proust.

	Living Blood.	Man.	Woman.	Dead Blood.	
Liquor Sanguinis.	Water	779·	791·1	Crasementum.	Fibrin.
	Fibrin	2·2	2·2	Clot or Cruor.	Corpuscles.
	Albumen	69·4	70·5		Albumen.
	Salts, etc	6·8	7·4	Serum	Salts.
	Corpuscles, red and white	141·1	127·2		Water, etc.
	Fatty matter	1·6	1·62		

The Chemical Analysis of Blood's Hæmatine given by Mulder.

Carbon	65·84
Hydrogen	5·37
Nitrogen	10·40
Oxygen	11·75
Iron	66·5

With respect to the shape of the red corpuscles, hosts of theories too numerous to sanction the recital of more than a few of the most prominent ones, such as the Abbé Torré's, who thought them to be rings; Monro, flattened as coins, with a dark spot in the centre; Cavallo considered these observers to have been deceived by the modification of the rays of light, and that the bodies were really spherical in shape; finally, Dr. Young, who came after Hewson, and had somewhat the same opinion, says, in the skate they are composed of an external envelope, with a central nucleus, the two having but little adhesion, and seemingly of different natures and consistencies. In human blood this gentleman thinks them to be flattened, with a depression in the centre of the corpuscle.

Leeuwenhoek supposed the size differed in different animals; later writers consider them to be nearly of the same dimensions. Haller estimated their diameter to be $\frac{1}{500}$ of an inch, Dr. Young and Captain Kater agreeing with him, while Mr. Bauer set the diameter at $\frac{1}{200}$ of an inch. The generally received average $\frac{1}{3500}$ to $\frac{1}{3200}$, Todd and Bowman.

Harvey gives the weight of the blood to be $\frac{1}{20}$ of that of the body; Haller $\frac{1}{5}$—the latter being much nearer the truth.

Interesting as this subject is, it must now be left to attend to that which directly bears upon this thesis.

After several speculations with regard to the circulation of the blood, some approaches to the correct one were made by Cesalpini; but it was not until about the year 1619 or '20 that the celebrated William Harvey made his famous discovery of the true circulation. The result of his studies was made public eight years after this date in a short tract, which has been described as being "remarkable for clearness and perspicuity, justly characterized as one of the most admirable explanations of a series of arguments deduced from observation and experiment that ever appeared on any subject." This great discovery was received at first with much dissenting clamor, on account of his differing with or questioning the authority of Aristotle and Galen; but he lived to see his theory triumphant. Harvey made known the important fact of there being two circulations, namely, the greater and lesser, or systemic and pulmonic. This may be more readily understood from a demonstration by means of the numeral figure eight (8.) The greater circle representing the systemic circulation, the lesser circle the pulmonic, and the point of contact of the two circles the heart. By the systemic circulation is meant the passage of the blood from the left ventricle of the heart through the body and back to the right auricle by means of the arteries, capillaries, and veins. By the pulmonic circulation, the passage, by a distinct set of arteries, capillaries, and veins, from the right ventricle through the lungs and back to the left auricle. Each system thus has its own set of arteries or efferent trunks, and veins or afferent trunks; these communicating at their central extremity by the heart, at their peripheral extremity by the capillary vessels, by which are meant the minutest ramifications of the two systems inosculating into a plexus.

The chief impelling power of the blood is due to the heart's rhythmic motion, which is attributed to the *vis insita*, though the exciting cause cannot be positively determined. The contraction of the two auricles is synchronous, the two ventricles also; but that of the auricles and ventricles is not. The contraction of these parts is followed by their dilatation or diastole, the first being the systole.

The diastole of the heart, according to Cruveilhier, is an active force, no precise account of the cause being given. It is supposed to be owing to the presence of the yellow fibrous tissue, interwoven with muscular substance, upon whose elasticity the first stage of ventricular diastole is supposed to depend; the second stage being caused by the ingress of blood produced by the auricular systole. During the diastole of the heart the impulse occurs; this is not the arterial pulse, but the shock communicated by its apex to the walls of the thorax.

The heart has two sounds, one at each beat; they are followed by a short interval of repose, after which they recur. If the whole interval, from the beginning of one pulsation to the beginning of the next, be divided into four equal spaces of time, the first two will be occupied by the first sound, the third by the second sound, while the fourth will represent the period of repose.

First sound is during the second stage of ventricular diastole, ventricular systole, and auricular diastole. Impulse against the chest. Pulse in the arteries.

Second sound is during the first stage of ventricular diastole.

Interval. Short repose; then auricular systole, and second stage of ventricular diastole, etc.

The left heart is much the strongest, although it has not quite as great capacity as the right. The different cavities each hold about two fluid ounces, but it is probable the ventricles do not entirely empty themselves at each stroke, discharging probably one and a half ounces. Reckoning 75 pulsations per minute, 112 ounces or 7 pounds of blood will have passed — the whole quantity of blood in the body equaling about 28 pounds in a person of 140 pounds weight; this quantity would, therefore, pass through the heart once in four minutes, and circulate from this calculation about fifteen or twenty times within an hour. Recent experiments would seem to make the time for the passage thirty seconds. This shows how absurd some of the conclusions were, as the time has been said to be twenty-four hours.

The motion has been estimated to be 390 feet per minute, near the heart, if there was no force to overcome; also 149 feet per minute. No reliance can be placed upon these estimates.

The force of the heart has been stated to be about 13 pounds; this is the nearest approximation. Hales thought it would sustain a column of blood 7½ feet high, 4 pounds 6 ounces, while Poisseville gave 4 pounds 3 ounces. As an example of the great errors in this kind of investigation, Keill gave it as 5½ ounces; Hales, by another authority, 50 pounds; and Borelli the unheard-of, undreamed-of amount of 180,000 pounds!

The number of contractions of the heart are from about 70 to 75 per minute; its frequency gradually diminishes from the commencement to the end of life. Just after birth it is from 130 to 140; in old age 50 to 65. Age, sex, muscular exertion, emotions, and temperaments modify it; also time of day, being more frequent in the morning, becoming gradually slower as the day advances. After a meal it is more frequent, or on rising from a recumbent to a sitting or standing posture. In inflammations and fevers it is more frequent than in health, and when the vital powers decline, it becomes more frequent and feeble. In nervous affections, with more oppression than exhaustion of the forces, the pulse is often remarkably low.

The arteries are composed of three coats, the external, middle, and internal. The first is firm and strong, formed of condensed cellular tissue; second, elastic and fibrous, with a few muscular fibres, these regulate the flow sometimes; third, thin, serous covering, smooth and transparent, to diminish the friction of the blood in passing through the arteries. These vessels are nourished by the *vasa vasorum;* their nerves are derived from the sympathetic.

The capillaries are the connections between the arteries and veins, which may be seen in the web of the foot of a frog, tail of a tadpole, lungs, urinary bladder, and tongue of the frog. Malpighi taught this method of seeing the capillary circulation. The size of these capillaries varies from $\frac{1}{1000}$ to $\frac{1}{5000}$ of an inch. These are as minute as any of the elementary tissues. Microscopic observation proves them to be merely fine tubes, no vessels arising from them, and there being no open mouths; serous vessels may exist, but as yet have not been demonstrated. These minute vessels appear to have coats, and they are considered to aid or augment the power of circulation.

The veins arise from the capillaries; they have the same coats as the arteries, but are less strongly developed. The capacity of the veins is said to be two or three times that of the arteries. The veins are filled with valves, to prevent the reflux of the blood. This circulation is due to the *vis a tergo*, aided by the *vis a fronte*, or suction of the heart, also inspiration; finally, muscular movements are among the most important.

In the pulmonary circulation, the venous blood is in the arteries, and the arterial blood in the veins. The portal circulation is entirely independent of the pulsations of the heart, but under the influence of the pressure of the abdominal walls.

The passage of the blood from the heart to the teeth is as follows: from heart to aorta, thence to the innominata, or left carotid, right carotid, external carotid, and internal maxillary. From this the inferior dental, the superior dental, alveolar or maxillary, and the infra-orbital are given off. The first enters the posterior mental foramen, supplying the nerves of the teeth of the lower jaw, through their roots' apices, by fine branches. The second enters the superior maxilla by a number of foramina at the tuberosity of the upper jaw, giving branches to the nerves of superior molar teeth, antrum, and gums. The third sends branches to the nerves of the anterior superior teeth.

The venous blood being emptied into the facial vein, into the internal and external jugular; thence to the subclavian, vena innominata, and descending vena cava, to the heart.

Having pursued the subject thus far, it may be best to give a short glance at the different tissues of these structures in the human subject, so as the more ably to handle the important point of the circulation here.

According to most, if not all, the authority of the present day, the teeth are divided into three structures, of different density and composition, namely: enamel, dentine, and cementum; the first covering the crown, the latter being the main body of the tooth, that portion of this which is in the bone of the jaw being covered by the cementum. Outside of the cementum is the periodental membrane, or periosteum, a vascular structure, while in the centre of the dentine is a highly organized, vascular organ, the pulp or nerve. These two tissues are plentifully supplied with blood-vessels, and from their position are beautifully adapted to the nourishment of the tooth.

The dentine is composed of two distinct parts—dental tubuli and intertubular tissue; the former having distinct parietes, about the same thickness as their calibre. The tubuli, although generally empty, sometimes even in healthy dentine, appear to contain a minutely granulated substance.*

The fact that nerve fibrils have been discovered in the dentinal tubes, will very satisfactorily account for the sensitiveness of the dentine; yet it does not in any way go to prove the existence of vascular cells or tubes. Indeed, it rather may be looked on as another of the many oppositions to this point in the controversy, showing, as it does, how minute and careful the examinations of this structure have been.

The credit of having been the first to point out the nerve fibrils does not, I believe, belong to Mr. Tomes, but to Mr. Owens, who years before had noticed this in the tusk of the elephant.

The dentinal tubuli radiate from that vascular canal, the pulp cavity, toward the external surface. It is true, they undulate, but the general course is nearly rectangular from the surface from which they start; varying considerably in different parts of the tooth, yet generally anastomosing with their fellows; thus forming a complete net-work of tubes throughout the dentine.

These tubes, when measured by the micrometer, are shown to be, in the very largest, about $\frac{1}{10000}$ of an inch in diameter.

The intertubular tissue occupies the space between the tubuli, thus rendering the dentine nearly a solid mass; the area of the tubes and the cells of these tubes being the only hollow portions. This structure varies slightly in different parts of the tooth.

The enamel, the hardest of the dental structures, is composed of dense, semi-transparent, hexagonal, prism-shaped fibres. There are occasionally a few linear spaces connecting with the dentinal tubuli at the union of the enamel and dentine.

The cementum in a tooth that has been used commences where the enamel ceases to incase the dentine, gradually thickening to its termination at the apex of the fang.

This structure is similar to osseous tissue, being composed of minute granules united together. Scattered through this tissue are cells, from which numerous tortuous tubes proceed, the tubes themselves freely anastomosing with each other and with those sent from neighboring cells. By this arrangement, a net-work of cells and tubes, permeable by fluids, is carried throughout the whole mass. When the cementum exists in any quantity, it may be traversed by canals for blood-vessels. This usually happens where the cement is double, as at the union of two or more fangs. The tubes here branch from the cells of the cement, (varying in number according to its amount,) or from the vascular canals; the arrangement of tooth-bone presenting the appearance of concentric laminæ, having for their common centre the centre of the tooth or vascular canal. This constitutes a strong feature of the resemblance to osseous tissue. The cells are scattered with some degree of regularity, generally following a course as though placed in the same manner. The majority of the radiating tubes of the cells pass either toward the surface of the tooth, or, when such exist, toward the surface of a canal for a blood-vessel. Many branches also go toward the dentine, and anastomose with the terminal branches of the dentinal tubuli; a few follow the length of the tooth, anastomosing with the tubes pursuing a similar direction. Frequently, however, a cell with its tubuli resembles a tuft of moss; the tubes in a mass taking one direction only, and toward a surface upon which blood-vessels pass. In size the cells differ greatly, varying from $\frac{1}{10000}$ in. to $\frac{14}{10000}$ in.; form generally oval, sometimes round or fusiform, yet they vary to a very great extent. The inner walls are minutely nodulated.

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* Mr. Tomes, on page 327 of his last work, says: "With the hope of gaining some further knowledge upon this point, I commenced a series of observations. I had, however, but little expectation of finding that one of the most important points in dental structure had been overlooked, namely, that each dental tube is permanently tenanted by a soft fibril, which, after passing from the pulp into the tube, follows its ramifications."

Here, then, may be seen how impossible it is to look upon the dentine as vascular, the blood corpuscles being $\frac{1}{3500}$ of an inch in diameter, while the calibre of the tubuli is only the $\frac{1}{10000}$ of an inch in diameter, being about one-third as large as the corpuscles.

Thus it would be impossible for blood to circulate in these tubes. This seems to be positive proof of the non-vascularity of the dentine. To pursue this matter further, all nutrition has been proved to be extravascular; and would it not then be a work of supererogation to place vascular canals in the dentine? It may also be said that there has yet to be found a case wherein nature has performed a work which was not required, the whole economy being one of, if not the most, beautiful lessons of the proper balancing of demand and supply, by the most simple means. The liquor sanguinis carries through these tubuli all the necessary nourishment for the dentine, and permeating, as it does, the entire structure, cannot possibly give any excuse for the assertion that dentine is vascular.

In the cementum, it is not a common occurrence to find vascular canals, yet this is the most highly-elevated tissue (in the scale of life) of the three.

Finally, in persons who have met their death from suffocation, the teeth are sometimes stained red. This has been erroneously advanced as a proof of the vascularity of the dentine—the assertion being made that the blood-vessels became engorged.

The true answer to this is, that the red corpuscles are decomposed, broken up, or are dissolved in the liquor sanguinis, and if this be colored red, the tooth itself will of necessity present the same appearance.

PHILADELPHIA, Feb., 1861.

ON DENTAL PHARMACY.

BY EDWARD PARRISH.

There is no class which comes more directly in contact with the public than pharmaceutists, and none having more frequent opportunities to inculcate hygienic truths, or to give direction to the use of remedies among the ignorant; that these opportunities are often neglected, and even abused for the purposes of gain, forms no exception to the ordinary evidences of human frailty. But besides his more ordinary pursuits, every pharmaceutist of recognized ability is often consulted by his friends of the kindred professions in regard to the physical and chemical properties of drugs, and their modes of application. These he will answer well or ill, according to his proficiency; and if he would thoroughly fill up the requirements of his position, he must inform himself of the chemical and pharmaceutical requirements of every branch of science which borders on his special domain.

The points where the professions of dentistry and pharmacy touch each other are not so numerous as those which have given to pharmacy the character of "the handmaid of medicine;" and yet there can be no doubt of the utility of a limited knowledge of this art to the dentist, while a certain acquaintance with what might be called dental therapeutics is almost essential to the pharmaceutist.

Tooth-drawing, which is still largely practiced by barbers, (a barbarism in a twofold sense,) is justly esteemed by dentists as requiring the exercise of their highest judgment; and yet how often is it resorted to through ignorance, when an intelligent precaution would save the patient much suffering and an irreparable loss! The custom of applying to the apothecary for palliatives in advance of the last resort gives him an opportunity to advocate a conservative practice which may be greatly to the interest of the sufferer. In the selection of palliatives and other applications, there is abundant room for the exercise of judgment and skill; and here, too, the intelligent pharmaceutist should be able to serve the dentist by hints founded on a more intimate and thorough acquaintance with remedies than generally falls to the lot even of those entitled D.D.S. A slavish regard to authorities is the main check to the progress of professional knowledge; the mind not fired with a zeal for experiment is easily satisfied with the few facts which its limited vision takes in; and it is only as principles are applied to facts which are known that we can climb up to those which are unknown. Dentists seldom look enough into materia medica; the fact that creosote, tannic acid, chloride of zinc, arsenious acid, morphia, ether, and chloroform constitute almost the only remedies usually met with in the offices of dental practitioners, indicates an ignorance of the resources of the materia medica by no means consonant with their acknowledged acquaintance with the anatomy, physiology, and pathology of the organs of mastication, and their skill in the mechanical parts of their art.

It must be acknowledged that the classes of remedies acting primarily on the brain and nervous system are too little known, even by physicians; though a wonderful advance in this respect has marked our times, and it is believed that they are now more used in practice than ever before. The modern classification of these into narcotics, which primarily stimulate the brain followed by sleep, nervous stimulants or antispasmodics, excito-motor stimulants, nervous sedatives, which are found so very useful as local applications, and arterial stimulants and sedatives, has produced its legitimate fruit in a more intelligent and more general use of them in practice. Should not dentists, who have so much to do with a certain class of painful nervous affections, acquaint themselves practically with every remedy known to exercise a controlling or modifying effect upon the subtle causes of sensation?

It is not my object in the present essay to pursue this suggestion further, believing that the readers of the Dental Cosmos are generally of the class least requiring to be taught how to seek available knowledge. The same train of remark might be applied to the use of astringents and tonics, to which useful classes modern pharmacy has furnished important additions in some of the recent preparations of iron, and in several elegant vegetable remedies.

In this connection, a few hints may be dropped in regard to tooth-powders and washes, the name of which is legion. Myrrh was formerly the basis of most of these, and is still much prescribed by dentists, but I would submit the question to the intelligent reader, whether it is well selected. It is an astringent with gently stimulating qualities, quite desirable in treating relaxed and flabby conditions of the gums, and a resinous character, which adapts it, by clogging up the bleeding vessels, to check hæmorrhages. None of these properties fit myrrh to the purposes of a daily, or even frequent, tooth-wash. The flabby condition of the gums is by no means a universal complaint, and any extensive hæmorrhage from them is quite rare, while the tendency to accumulate deposits of tartar and of foreign substances upon the teeth, and between the teeth and gums, is a disadvantage which needs to be constantly counteracted. Tincture of myrrh has no particular uses in this connection, but by leaving an adhesive, varnish-like deposit on the teeth, would seem to have an unfavorable effect on their cleanliness.

For general use as a tooth-powder, chalk seems to me to be without a superior; when perfectly levigated, as in the finest qualities of *creta præparata*, it possesses no gritty particles, capable of injuring the enamel, is sufficiently soluble in the saliva to be prevented from accumulating in the interstices of the teeth and gums, and, possessing no unpleasant properties, either of color or taste, may be delicately flavored and made agreeable to the eye. Charcoal, which is so highly recommended by some, possesses but one merit—that of absorbing with great facility any unpleasant or injurious secretions. It is, like all vegetable powders, objectionable from its complete insolubility and consequent tendency to form the nucleus for deposits on the teeth. The common kinds of charcoal have the further disadvantage of a coarseness of grain which is obviated in betel-nut charcoal, and perhaps other kinds, especially popular in England.

In the manufacture of tooth-washes, or rather mouth-washes, there is considerable scope for ingenuity, always keeping in view the two objects—cleansing the teeth and imparting a pleasant taste and odor to the mouth. There is a class of drugs only lately coming into notice in this connection, which, with other qualities, combine a soapy and detergent property, due to a peculiar vegetable frothing principle, called *saponin*, and its analogues. The quillai bark, of South America, is used by the ladies where it is known for the skin and hair. A West India plant believed to contain *saponin* is also much sold in Jamaica, in small sticks, for cleaning the teeth, the end being softened so as to resemble a brush. Our own soap-wort, *saponaria officinalis*, probably contains the same principle, and might be adapted to this use. A tincture of quillai I have found an elegant basis for a tooth-wash, to be dropped on the brush, which, from its frothing and cleansing properties, is universally popular where it is known. A weaker preparation, with a rich flavor, to give the breath an agreeable fragrance, to be used for rinsing the mouth after the free use of the brush, is preferred by some. I know of no disadvantage resulting from the pretty free use of such washes, and believe the additional cleanliness imparted by them to the teeth and mouth a positive advantage in many instances.

Finally, do not dentists require a closer affiliation with pharmaceutists for mutual advantage and improvement, and should there not be a recognized pharmaceutical specialty introduced into the arcana of dentistry? In their direct and constant intercourse with the public, and practical familiarity with remedies and their modes of preparation and modification, the "knights of the pestle and mortar" have many facilities for serving the interests of dentists and for promoting the progress of dental science.

PHILADELPHIA, June, 1861.

The above paper by Mr. Parrish is well timed, and is one of a kind which is very useful to the dentist. We hope it will not be his last. We greatly need contributors like him to dental journals. J. D. W.

(Add the two following art. to the one on page 608)

DISCOLORATION OF DENTINE.

BY C. WOODNUTT, D.D.S.

In answer to T. B. Welch, I will give you a method of restoring a tooth, in the condition he speaks of, to its natural color, which I have used with tolerable success. Clean out the cavity well with excavators, without taking away more of the dentine than is necessary—for a dead tooth is brittle, and you want as much of it as you can retain to add to its strength. After this has been done, I saturate a pledget of cotton with liquid chloride of soda (Labarraque's solution) and place it in the cavity, pressing it in contact with all parts of it, if possible. Your object will be attained much more rapidly, if the cavity is then sealed up with wax, or some other material, to prevent the dilution of the chloride by the fluids of the mouth. The application should be renewed every day until the tooth is bleached as white as you want it.

It sometimes takes two weeks to restore the color, in a bad case, but I think the above treatment will eventually succeed if persevered in. The solution certainly contains capital bleaching and disinfecting properties.

Pottsville, Pa., June, 1861.

With reference to bleaching teeth, as recommended above by Dr. Woodnutt, we would say that if "*persevered in*," it will destroy the tooth. If it be used at all, it must be for a very limited time, and not very strong. The experiment of placing a tooth in Labarraque's solution for forty-eight hours will solve the problem. J. D. W.

DECOLORATION OF DENTINE.

BY W. H. ATKINSON, D.D.S.

The following is sent in reply to a request for information on this subject by T. B. Welch:—

Open into nerve canal through lingual depression, and clean out all retained matters to the apex of fang. If the tooth is not tender, proceed to enlarge the canal with watchmaker's brooch set in a handle until cylindrical to the point; excavate all that you may and retain strong walls to the cavity of crown, opening every tubule to facilitate introduction of bleacher. Then take accurate measure of the depth of canal and pass in a truncated burr or rose-head drill, or brooch, a size or two larger than the one previously used, to within $\frac{1}{8}$ or $\frac{1}{16}$ inch of the apex, thus leaving a shoulder against which to pack. Then pass a pledget of cotton ~~or flax~~, wet with pure creosote, into the part of the canal between this shoulder and the point, (if the cotton should project a very little beyond the apex no matter,) and proceed to fill imperviously half the remaining part of fang-canal with gold, thus securing against the possibility of escape of the bleaching solutions which are so troublesome where freely used, as they must be to obtain the best results. Now proceed to pass solid chloride of zinc into the canal and pulp chamber, taking care to mash it into fine bits or powder *in situ*, to secure promptness of bleaching effect; close tightly with paper, cotton, or wax, for fifteen or thirty minutes, after which wash out thoroughly with syringe charged with *warm*, *pure* water. Repeat process until the color is restored, and then fill nicely.

I should prefer to repeat every half hour or hour until complete, but often we cannot control the patient's time sufficiently, when the repetition must conform in time to his (and our) convenience.

Cleveland, Ohio, June, 1861.

(Also add art on pg 57 vol [illegible])

HAEMORRHAGE FROM EXTRACTION OF A TOOTH.

BY ED. ORTON PECK.

Extracted the second right inferior molar for Miss D., at one P.M.; found some little difficulty in removing the tooth, from its being very badly decayed; the fangs removed separately; was called at eight P.M. to see her, as the hæmorrhage kept up so profusely that she began to be alarmed. I noticed the hæmorrhage at the time of extraction was very profuse, but thought nothing of it, as the gums were in a highly-congested state. I found her looking pale and weak from loss of blood; after several applications of a pledget of cotton, saturated with perchloride of iron, succeeded in arresting the hæmorrhage; left a pledget of cotton, saturated with the solution of iron, over the wound; also left the perchloride of iron, with directions for use if the hæmorrhage should set in again, which it did upon the patient's lying down, when the iron was applied as directed, by her brother, with the effect of again arresting the hæmorrhage. The patient passed the rest of the night in an easy chair, kept quiet the next day, and has had no further trouble.

Plainfield, N. J., June, 1861.

PROCEEDINGS OF DENTAL SOCIETIES.

POSTPONEMENT OF THE MEETING OF THE AMERICAN DENTAL ASSOCIATION.

In pursuance of the generally expressed desire to that effect, from the officers and members of the American Dental Association, the President, Dr. Atkinson, hereby authorizes an announcement of the postponement of the regular meeting for one year.

The Association will meet in the City of Cleveland, Ohio, upon the last Tuesday of July, 1862, at ten o'clock A.M.

W. Muir Rogers, *Corresponding Secretary.*

Shelbyville, Ky., June 22, 1861.

EDITORIAL.

DISSOLUTION OF COPARTNERSHIP.

The Copartnership heretofore existing between the subscribers, and carried on in Philadelphia, New York, Boston, and Chicago, under the name and firm of

JONES & WHITE,

is dissolved by mutual consent, as of the first of May last. The entire business has devolved upon, and will be continued by Samuel S. White, one of the firm, at all their former establishments. The debts due to the firm at Philadelphia, Boston, and Chicago belong to, and will be settled with Mr. White; those at New York belong to, and will be settled with Mr. Jones, at the New York office.

Dated New York, June 26th, 1861.

ASAHEL JONES,
SAMUEL S. WHITE.

PUBLISHER'S NOTICE.

The present number closes the second volume of the Dental Cosmos, and with it our engagement to those who have subscribed for it. The first number of the third volume will be issued early in the ensuing month of August, and the succeeding numbers will appear as usual, monthly. We shall, as heretofore, endeavor to make it a reliable and practical exponent of the science and art of dentistry, and, so far as possible, indispensable to every practitioner of this specialty. We shall, as hitherto, adhere to the system of *cash payments in advance*, and therefore every one who wishes it will please to so signify by remitting the price of subscription, viz. $2 50.

DENTAL SCIENCE.

Few branches of science and art, perhaps, have made such rapid progress as that of dentistry. It is within the reach of the writer's recollection that the majority of persons calling themselves dentists communicated what little they knew to the student in the most solemn manner, and with the promises of perpetual secrecy; and some required of the student a bond, binding himself in a large sum, not to practice within a given distance of his instructor's residence; while others required the pupil to take an oath not to practice in his city, town, or State. The first gentleman, practicing our art, whom we called on to make inquiry regarding the study of the *profession*, as it was called, only wished to put us on our *honor* not to practice in Philadelphia. This we thought exceedingly liberal. After the gentleman became satisfied that our *moral character* was good, and that we would be worthy of admission into the profession, the pecuniary arrangements were about to be made and the period of pupilage agreed upon, when, to our amazement, the time was to be *three weeks!* We fell back for a few days' reflection, when we finally declined to accept the arrangements. We did not so much decline the proffered arrangement from any want of a belief that we could not learn a great deal in three weeks, but we did not think we could get the *worth of our money* in so short a time—*one hundred and fifty dollars!*

We had learned everything else in life so slowly, that to acquire one hundred and fifty dollars' worth of knowledge in so short a time, taxed our credulity; but to impart to us some confidence that the time was sufficient, a gentleman of about thirty years of age was introduced to us, who had been studying only *one week*, and he declared himself perfectly satisfied; and his preceptor was to give him a certificate that he was fully competent to practice all the branches of the art! Still we declined the opportunity, and started in pursuit of another respectable member of the profession in full practice. He did not charge any more as a fee for pupilage, but required the long and protracted period of *three months*, to properly acquire a *perfect* knowledge of everything! and that was what we were after.

We need hardly exclaim here, *deluded youth!* We put in the time, obtained the desired *certificate* that everything was right, but our daily wants revealed to us that we were standing on a very narrow basis. Fortunately our wants and common sense dictated to us that a much broader field of knowledge and study was absolutely essential, so we resorted to the study of the medical profession to obtain those principles of knowledge which might open to us a better understanding of our daily wants in the practice of the profession of our adoption. Together with this we availed ourselves of every opportunity of association with members of the profession to obtain from them their modes of manipulation and practice, adopting everything which squared up with the sciences taught by our medical studies. In this way it required ten years of patient industry, day and night, to acquire a respectable knowledge of the simple art of *dentistry;* since which time we have not been idle in the pursuit of knowledge, and still we have much to learn. We can say here, without boast, that our opportunities for twenty-four years have been ample to experiment on our own impressions, as well as to witness the results of others of every grade in the profession as well as of every country almost in which dentistry is practiced, and still there seems to be much confusion in our noble art. This should not be; there is too much haste on the part of the young to advance in practice; there is too much self-reliance upon individual ability or natural capacity; not enough submission to and dependence upon the acquisition of the details of science; too many seek in and rely on their imagination for correct principles of practice; too many conceive "it is easier to believe than to be *scientifically* instructed;" they advance too far and too fast into the fields of speculation ever to present a compact and solid front of practice founded upon the natural laws of the economy of the human subject, and the simple principles of practical and mechanical truth. No single one is, in himself, an embodiment of what our profession is or ought to be; he must be controlled more or less by the experience of other laborers in our cause, but never letting go of the laws concerning their manipulations and practices. It is nothing but the teachings of science which will enable him to distinguish between that which is true practice and that which is false. Operators may differ, but laws and principles are the same with all, and where practices differ it would be well to see that attention is paid to whether the difference is not in misconception of principles for want of proper preliminary information, than to cavil about the results of the difference in success in practice. Our profession is one in which a kind of success in practice is much more rapidly obtained than the details of a sound scientific knowledge. J. D. W.

INTERSTITIAL ABSORPTION OF DENTINE.

An interesting case came under our notice to-day, in confirmation of the theory that the permanent teeth are liable to insterstitial absorption. Miss W., a young lady aged seventeen, had a number of teeth filled by us last summer, and among the rest a left superior lateral incisor which was badly decayed on the mesial surface. After excavating the caries, which was attended with some pain, we discovered that although the pulp was not exposed in the slightest degree there was a very thin covering of dentine to protect it from extraneous influences. After filling the cavity, the patient was informed that the tooth would probably be extremely sensitive when exposed to variations of temperature, such as cold or hot fluids, and was cautioned to avoid as much as possible subjecting it to great shocks in that way. In the performance of other operations the patient was seen for several days after this, but made no complaint about any uneasy sensation in the tooth, except when she neglected the injunction above. We heard nothing more about this case until the present time, when the patient again came under our care preparatory to leaving for the country. On examination, this tooth was found a little discolored, somewhat loose in the socket, and slightly tender on striking it with the handle of an instrument. In response to a question, she stated that she had not been annoyed in any way until within the last week or two, when a slight pain, which was not very severe but persistent, extending along the jaw and up along that side of the face, in such a way that she was unable to decide whether the difficulty originated in her tooth or not, had troubled her somewhat.

The filling was found in a perfect condition, and its removal, which we decided on as soon as all of the facts had been ascertained, was attended with some difficulty, on account of the tenderness of the tooth to pressure and the compact state of the operation. After the gold had been entirely removed, an opening of some size into the pulp cavity was distinctly visible to the eye, and through it a small quantity of blood escaped from the pulp. A delicate barbed brooch was passed through this opening into the pulp cavity, (without causing any pain,) and rotated in the tooth until the devitalized pulp became entangled, and was then removed. In the course of two days the discoloration of the tooth and the tenderness to touch having disappeared, the pulp cavity and cavity of decay were refilled.

Prior to filling the tooth last summer, there was, as already stated, a thin covering of dentine; on removing the filling, a considerable portion of this had disappeared. That it was not removed by the excavator, we are certain, for there was nothing taken from the cavity but the gold. To our apprehension, the only explanation that accounts for the phenomena is the theory, first suggested by Dr. J. D. White, some years ago, that it is due to absorption.

In accounting for this phenomenon, the advanced physiology of the present day finds in molecular disintegration an all-sufficient explanation. Had the normal state of the pulp continued cell by cell, new dentine would have formed around the parietes of the pulp cavity, until at last, in old age, the chamber would be nearly if not completely obliterated; through the influence of extraneous circumstances, however, an abnormal condition of the pulp is induced, and cell by cell as the dentine was originally formed, so cell by cell a retrograde metamorphosis taking place, the dentine disappears.

J. H. M'Q.

POSTPONEMENT AND ADJOURNMENT OF ASSOCIATIONS.

By reference to another part of the magazine, it will be found, by the notice of the Corresponding Secretary of the American Dental Association, that the President, in compliance with the expressed wish of the officers and members, has authorized a postponement for one year of the meeting that was to have been held at Cleveland on the last Tuesday of July, 1861.

Although regretting the necessity of such a step, it must have been evident, in the beginning of the present eventful struggle, to every reflecting mind that gave the subject any consideration, that such a course would be inevitable. For at a time when the rights, the liberty, and the perpetuity of a great and glorious nation so deeply engross the attention and demand the unwavering support of its people, the cultivation and advancement of science, for the time being, becomes a secondary consideration. Indeed, in such a state of things, it is almost an impossibility for those who keenly feel how much there is at stake concerning the rights of the present and future generations, to enter upon the investigation of scientific subjects with that concentration of mind, for a prolonged period, by which alone anything like advancement in science can be accomplished.

That which prevails with individual laborers also controls the operations of associated effort, and it is extremely doubtful whether any national association of importance, that is engaged in the cultivation of science, will meet this year and accomplish anything. The American Association for the Advancement of Science, the American Medical Association, the American Pharmaceutical Association, and other organizations whose names we cannot recall, have already postponed their annual meetings for this year, and there not only can be no doubt of the propriety, but there is an absolute necessity for a postponement of the meeting of the American Dental Association, as the attendance would be very small.

No better evidence, perhaps, could be afforded that the representation would be very limited from the different associations than that presented by the Pennsylvania Association of Surgeon Dentists, which, on being called together to consider this question, the impossibility of leaving home to go on a distant journey at this time was generally admitted by the members present, and, while expressing the warmest interest in the advancement and perpetuity of the American Dental Association, unanimously concurred in a resolution presented by Dr. Fitch, suggesting to the President of the American Dental Association the propriety of postponing the contemplated meeting, but that before doing so the different associations represented in the organization should be consulted with regard to the expediency of such a course. At a subsequent meeting of the Pennsylvania Association the attendance was so limited that it was deemed advisable to adjourn until September.

J. H. M'Q.

A FIXTURE TO BE EMPLOYED IN ACUTE PERIODONTITIS.

On a former occasion, when commenting upon the treatment of *acute periodontitis*, we directed attention to a point which appears to be generally overlooked in the management of this affection, viz., that the first indication is to protect the diseased tooth from the rude shocks incident upon the occlusion of the upper and lower teeth. To secure this desirable result, we suggested the propriety of making a saddle of silver, to be worn upon a molar of the opposite side of the jaw from the aching tooth.

Since the publication of those remarks the following simple mode of constructing the saddle has suggested itself to our mind: An impression of the tooth on which the saddle is to be placed is taken in wax. The plaster model having been obtained from this, a piece of silver of the proper length, breadth, and thickness is then cut, in the manner represented in the diagram, *Fig.* 1. The cross-piece A being intended to rest upon the articulating surface, while the two ends B are to be bent, to serve as bands by clasping the sides of the tooth, as in *Fig.* 2. There is no occasion for swedging the fixture on a metallic cast, as it can be adapted to the plaster model by means of the pliers.

Fig. 1.

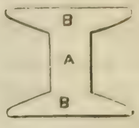
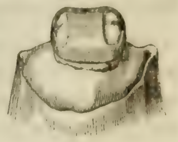


Fig. 2.



The appliance, as described, is intended for a tooth standing alone, but it can be readily adapted to a tooth in close proximity to others, by accommodating the bands to the modifying circumstances.

J. H. M'Q.

REVIEW OF DENTAL LITERATURE AND ART.

BY J. H. M'QUILLEN, D.D.S.

Salivary Calculi.—Through the courtesy of Dr. James E. Garretson, we had an opportunity of examining, a short time since, a very rare and valuable specimen which he had removed a few days before from the mouth of an old lady, aged sixty-nine. It was a large salivary calculus, somewhat longer and about as thick as a pigeon's egg, which had been formed by the right sublingual gland.

The doctor informed us that, eighteen years ago, the patient was kicked under the chin by an unruly cow. About a year after this accident a tumor began to develop in the region of the sublingual gland; this continued to enlarge for several years until it attained the size of a pullet's egg, when further development was arrested. From that time the patient had experienced considerable inconvenience, not only from occasional attacks of inflammation in the adjacent parts, but also from the continued presence of such a large body in the oral cavity.

The tumor had been examined by a number of medical practitioners, and pronounced cancerous in its character, and the patient advised not to submit to an operation or to permit any further manipulation for the purpose of ascertaining the nature of the affection.

The patient having been sent to Dr. Garretson, after a careful examination, he felt satisfied that there was nothing to warrant the impression that the tumor was malignant; on the contrary, he concluded that it was a ranula, but without deciding what the contents of the cyst, if present would be. On the strength of these convictions, he suggested the propriety of passing a scalpel through it, but the patient declined. Failing to obtain her sanction to this on several subsequent occasions, he at last, without apprising her of what he was doing, suddenly passed his bistoury through the tumor and found that it grated against a hard substance, which he was satisfied was a salivary calculus. Having pacified the old lady with this assurance, he eventually succeeded in dissecting out the specimen which he showed us. It is now in the possession of the eminent anatomist, Dr. Agnew. An ably-written and lengthened description of the case will be found in the *Medical and Surgical Reporter*, June 8, 1861.

BRITISH JOURNAL OF DENTAL SCIENCE—APRIL.

"THE ODONTOLOGICAL SOCIETY.—The monthly meeting of the members of this Society took place at their rooms, 32 Soho Square, on Monday evening, April 1st, 1861: William Minshull Bigg, Esq., President, in the chair."—

After the transaction of ordinary business, a paper "*On the Nature of Dental Caries*" was read by the author, Mr. Coleman. We present the concluding part, which contains the pith of his remarks:—

"The conclusions I have therefore arrived at are, that certain portions of our food, especially bread and vegetable substances generally, owing to the changes continually going on in their amylaceous constituents in the mouth, may, by their continued contact with a tooth in the abnormal condition just spoken of, communicate a change to its particles, and induce in it a disintegration or decay. I do not deny that the presence of a free acid may not assist, or even be necessary to this change, as we find it is in the digestion of food in the stomach; but that acids are not the sole, or even the most important agents in this process, I think the following experiments will clearly show.

"A number of recently removed teeth having been obtained, the carious and softened portions of the dentine were carefully removed, leaving only the hard dentine exposed. Several teeth thus prepared were placed in glass vessels, loosely corked, as follows: those placed in vessel 1 had some roast meat, finely divided, and water introduced with them. Vessel 2 had the same, only some saliva was added. To those in vessel 3 a strong solution of cane sugar was added. Vessel 4 contained the same, with saliva added. Vessel 5 had, besides the teeth, a small quantity of bread and water; and vessel 6 the same, with saliva added.

"These vessels and their contents were exposed to a temperature of about 100° Fahr. (that of the mouth) for a period of twenty days, and then examined, when the contained teeth presented the following conditions: those in vessels 1 and 2 had undergone no change whatever, the dentine being quite as hard as when put into the vessels; the meat had undergone putrefaction, and the fluid was strongly alkaline. The teeth in vessels 3 and 4 were thus affected: in 3, the change in the dentine was so slight as to be scarcely appreciable; but those from vessel 4, where we remember saliva had been added, had the exposed dentine considerably softened. The contents of these two vessels were strongly, though, I should say, about equally, acid. The greatest change, however, I found in the dentine of the teeth from vessel 6, where to a small quantity of bread and water saliva had been added. The softened dentine could readily be removed in thickish flakes. Vessel 5 had its teeth in about the same condition as were those in vessel 3; the decomposing teeth had probably effected to a small extent the same results as the saliva had. The fluid in vessels 5 and 6 was only slightly acid. The result of these experiments must, I think, lead us to dismiss from our minds the necessity for insisting on the presence of a free acid as the sole cause of dental caries. The teeth contained in vessel 6, immersed in a fluid only slightly acid, were much more altered and softened than those in vessel 3, which were exposed to a far more acid fluid. The character of acid in the last fluid, also, ought to have been chiefly that which is known to possess a considerable solvent action on phosphate of lime; but, as the decomposed bread in vessel 6 would probably also have generated some of the same acid, the liquids from both were subjected to analysis, when the saccharine fluid was found to contain by far the larger quantity of lactic in addition to other acids.

"Finally, microscopic appearances seem to confirm these views. A comparison of sections of dentine from the three following sources, viz., (1) from a carious tooth, (2) from a tooth removed from vessel 6, and (3) from a tooth decalcified by an acid, showed a far greater resemblance between the two first than between the last and either of the former.

"A point of some interest in these experiments is the apparent greater destructive action of the commonest article of our food, bread, than of either of the other two substances experimented with. If the inferences, I have drawn from them be correct, the frequent cleansing of the mouth with mild antiseptics ought to prove very beneficial.

"The gradual breaking up of the dentine after it has become softened is, I think, better explained by the views here advanced than by any other; and we can also readily comprehend from them how the discharges and decomposing particles separated from a carious tooth may induce the like condition in the contiguous surface of a neighboring tooth, which we so commonly find to be the case in practice.

"I do not deny the possibility of disease arising in the bony portions of the teeth from causes wholly unconnected with the presence of external agents, and which may resemble the diseases that occur in (it is true, the more vascular substance) bone. Specimens that have been preserved seem to prove it really to have taken place in the dentine; but I believe such cases are rather the exception than the general rule.

"It is my intention, in addition to the repetition of the experiments here described, to institute a variety of similar ones, to ascertain the action of different articles of food on the teeth, the results of which I shall be happy to communicate at some future meeting of this Society."

Dental Review, London.

On Calcification of the Dental Pulp.—(Continued from page 562.)—"If a tooth in which the pulp cavity has been partially filled up is divided in half, and one of the cut surfaces polished, the dentine which has been added to the interior of the tooth, subsequently to its completion, can be more or less readily distinguished even by the unassisted eye: this is owing to the modifications which occur in the structure of the newly-formed tissue, and which impart to it a peculiar appearance. The term *Secondary Dentine* has been given to this new tissue, in order to distinguish it from the original dentine of the tooth. The histological characters of secondary dentine vary considerably in different cases, according to the circumstances under which its formation has taken place. In some specimens it is almost transparent, and puts on a horny appearance, simi-

Fig. 4.

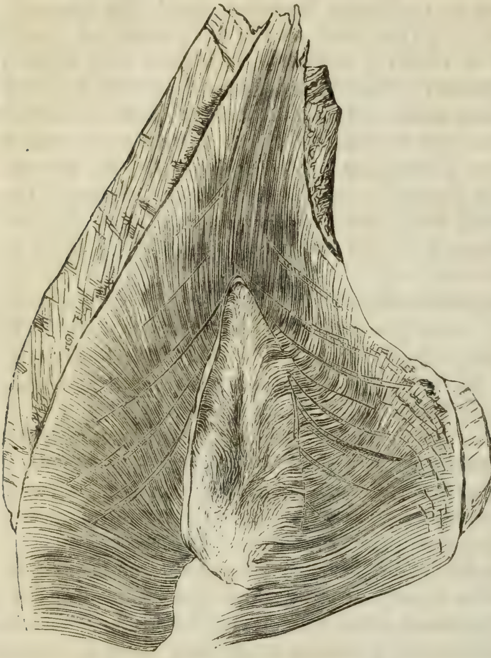
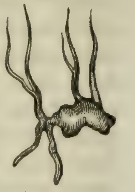


Fig. 5.



lar to that which is seen in the fangs of old teeth. The dentinal tubes are few in number; they pursue a wavy, undulating course, or are characterized by abrupt, almost angular inflexions; their branchings are exceedingly irregular, and where they join on to the original dentine they form deep curves, *Fig.* 4. Sometimes this transparent tissue contains here and there large irregular cavities, with tubes branching from them, *Fig.* 5; these structures resemble the lacunæ of the cement and of ordinary bone, but are distinguished from them by their irregular form and larger size. At other times the dentinal tubes become suddenly dilated in their course, and branches are given off from these dilatations. This kind of secondary dentine is found attached to the pulp surfaces of tubes whose terminal branches have been worn away by the action of wires or bands, *Figs.* 6 and 7; it also occurs in connection with tubes, whose terminal branches are involved in the dark-brown stains which occur on the outer surface of the dentine, and are indicative of incipient decay. Teeth in which the grinding surface has been worn away so

Fig. 6.

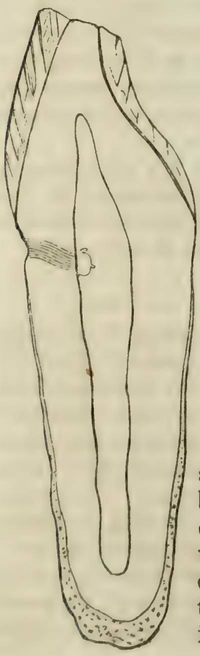
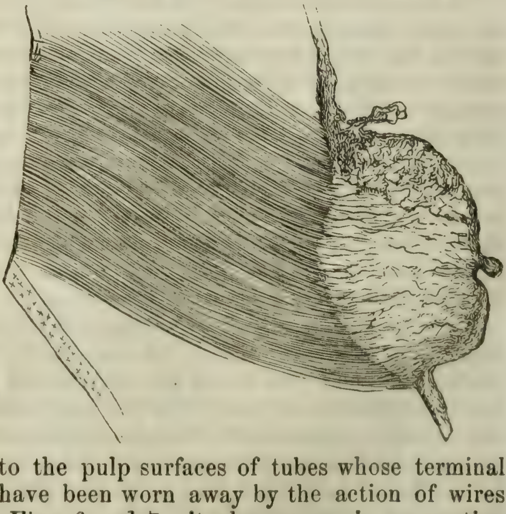
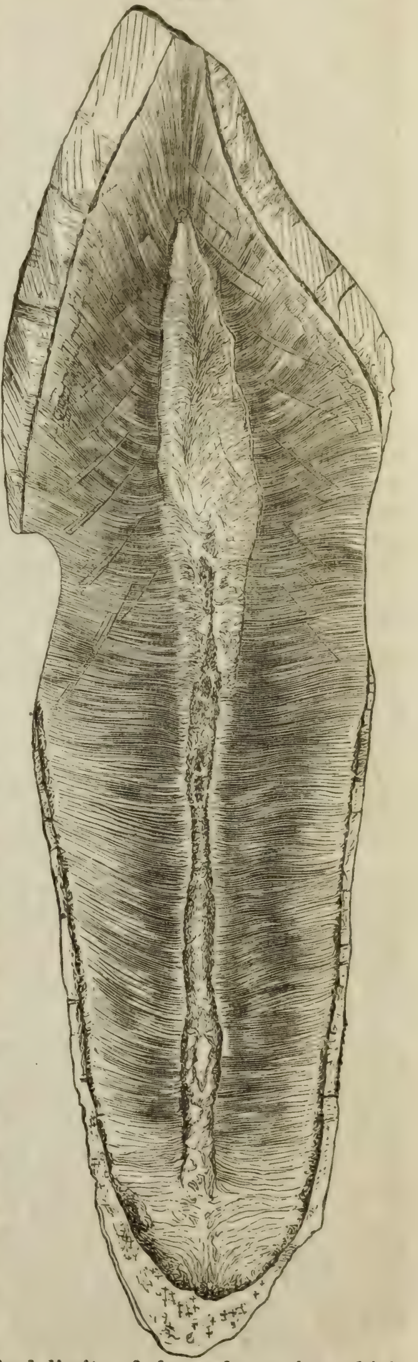


Fig. 7.



as to destroy the enamel, have the pulp calcified to a greater or less extent near the apex of the tooth; in fact, that part of the pulp becomes ossified which corresponds to the wearing away on the exterior of the tooth, wherever that may happen to be. In these cases the secondary dentine often assumes many of the appearances which have just been described; but it has not the extreme transparency which it obtains in the two former instances.

Fig. 8.

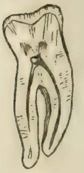


"In some cases, where the formation of the secondary dentine has taken place slowly, and where there has been little or no irritation from external injuries, the old and the new structures may pass almost imperceptibly into each other. Indeed, with a high magnifying power, it is impossible to say where the one ends and the other commences; it is only by using a low power, when the general arrangement of the parts can be seen at one view, that the line of junction between the two formations can be detected. Under these circumstances, the secondary dentine may be as dark and opaque, from the presence of numerous dentinal tubes, as the original structure of the tooth, and the tubes from the two portions pass in a gently undulating curve from one to the other. This kind of secondary dentine is most frequently met with in teeth in which the filling up of the pulp cavity has been the result either of age or of a constitutional tendency to ossific deposit, and has not depended upon decay or injury of the tooth.

"In other examples the characters of the secondary dentine are intermediate between the two extremes which have just been described; the dentinal tubes are not so irregular as they are in the one, nor so uniform or so numerous as they are in the other. The newly-formed tissue is perfectly united to the original dentine of the tooth, but, at the same time, there is a distinct boundary line separating them from each other, and precisely corresponding to the original limits of the pulp cavity, which are as clearly defined as in a tooth in which no calcification has taken place. This modification is well shown in *Fig.* 8, which represents a longitudinal section of an incisor tooth, in which the apex has been partly worn away by mastication, and the neck by the pressure of a gold band. Where the apex of the pulp cavity was formerly placed the commencement of the tubes belonging to the secondary formation is marked by an abrupt curve, so that the tubes pass in a direction almost at right angles to the course which they had previously pursued. At this part there is a layer of dentine as dense and opaque as the original structure of the tooth; it soon, however, becomes more transparent. The tubes are comparatively few in number, their branchings are very irregular, and communicate with dark opaque patches of imperfectly formed dentine. Toward the sides and central parts of the pulp cavity a very different structure is met with, which will be again referred to when speaking of *ossification* of the pulp.

"*Fig.* 3 represents a section of a lower molar, in which the pulp cavity has been considerably diminished by the addition of secondary dentine to the inner wall of the crown of the tooth. In the specimen from which the drawing was made, the grinding surface was somewhat worn away from the effects of mastication; but there was still a layer of enamel of considerable thickness—indeed, quite as thick as it is usually found in the majority of teeth—and there was no evidence of incipient decay on the exterior of the tooth. The cavity has been diminished at its roof and sides, the latter corresponding to the neck of the tooth, where there was not the slightest indication of wearing or other injury on the external surface. In the majority of these old teeth, as was the case in *Fig.* 9, there are usually one or two brown stains on the outer surface of the dentine, indicating a state of incipient decay. Even, however, admitting that these would be a source of irritation, yet in similar instances of commencing decay it is found that the effects of the irritation are confined to the main tubes from which the terminal branches originate, just in the same manner as in the case of teeth which have had a portion of their outer surface worn away by the pressure of a wire supporting artificial teeth. The encroachment upon the pulp cavity will be found to be quite as extensive at other parts of it as where the tubes corresponding to the incipient decay abut upon its interior. It appears, therefore, perfectly justifiable to regard the formation of the secondary dentine and the filling up of the pulp cavity in these teeth as the natural effects of old age, or of a constitutional tendency to ossific deposit.

Fig. 9.

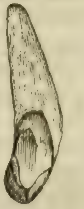


"This process may go on to such an extent as nearly to obliterate the pulp cavity; and it is just barely possible that it should do so entirely, but certainly such cases are extremely rare. A little consideration of the condition of the parts will show why this should be the case. The pulp cavity in the crown of the tooth is of a tolerable size, but the continuation of it along the fangs is extremely narrow. When ossification arises from age, or from a constitutional tendency, it most probably affects all parts of the pulp alike; and this being the case, the narrow canal of the fang must either become closed up, or so narrowed as to diminish the supply of blood which is requisite for the functional activity of the pulp. The consequence of this is that there are almost always some small remains of the pulp left unossified in the interior of the tooth.

"The effects which are superinduced by wearing away of the crown of the tooth upon the pulp are best shown in the six anterior teeth. Those which most frequently suffer in this manner are the central incisors and the canines. (See figs. 1 and 10.) In many of these teeth there may be observed a central spot of a dark-brown color: this marks the position of the original pulp cavity, and is in fact the formation of secondary dentine, which has been subsequently added in anticipation of the pulp cavity becoming penetrated by the wearing away of the tooth. The destruction of the crown goes on until at length it reaches the newly-formed dentine, which thus becomes exposed to the fluids of the mouth. This appears to imbibe any coloring matter, or to be affected more readily by the fluids of the mouth than the original dentine, and hence it is always of a darker color than the rest of the tooth, *Fig.* 10. In teeth which have been worn by mastication, when the dentine is examined beneath the microscope it will be found to present the same characters as those which have been previously mentioned, viz., considerable transparency, arising either from the absence of the dentinal tubes or their obliteration; secondly, great irregularity in the direction of those tubes which are present, and here and there dilatations or lacunal spaces, into which some tubes enter and from which others arise. (See figs. 4 and 5.)

"It was remarked, when speaking of ossification in the old tooth, that it was extremely rare to find the pulp cavity entirely obliterated. The present specimen serves to confirm the explanation which was given as to the reason why this should be the case. In fig. 4, the newly-formed dentine is seen on one side of the section to be connected with the original portion of the tooth throughout its entire extent, whereas on the opposite side it is only connected by a narrow neck, so as to leave a small space between the two formations, which in the living tooth must have contained a portion of the pulp, which had either been entirely separated from the remainder, or was in the process of being so separated.

FIG. 10.

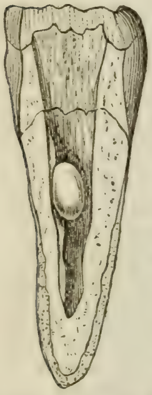


"The next form of injury which has been mentioned as superinducing these changes in the cavity of the tooth, is the presence of wires or bands which have worn away the necks of the teeth when supporting artificial teeth. These specimens are exceedingly interesting, in consequence of the very precise manner in which the extent of the injury is defined, and the similar precision which exists in the boundaries of the dentine which is added to counteract them. The specimen in illustration of this point (see figs. 6 and 7) is taken from a section which was made as far back as the year 1847. It is described in my note-book as a canine tooth worn away at the notched part by a wire which had supported artificial teeth, and appended to it is the following remark: 'In this case there has evidently been a greater change produced by the wire than the mere wearing away and formation of a notch; even to the naked eye all the tubes are evidently changed from their external terminations inward to the central cavity, where there is a projection, produced by a new growth of dentine. This is clearly in anticipation of the wire penetrating the pulp cavity, which before that had taken place would by this means have become filled up.'

"As the dentinal tubes pass from the pulp cavity they diverge somewhat, and terminate by subdividing into a number of delicate twigs. In consequence of this arrangement, any given number of tubes occupy a wider space at their termination on the exterior of the tooth than at their commencement on the interior. When, therefore, such a specimen as the one just referred to is examined beneath the microscope, it will be found that the boundary lines of the injured part do not pass parallel to each other from the exterior to the interior of the tooth, but that they converge as they approach the pulp cavity. (See fig. 7.) Every terminal twig transmits the effect of the injury it has received to the branch from which it proceeds; this, again, to one from which it has been derived, until at length they reach the main dentinal tube, from whence all the branches emanate. The same circumstance occurs with the other terminal branches, and thus the effect of the injury may at last be traced to those primary tubes whose branches correspond to the extent of the surface which is worn away by the wire. It is exactly opposite the mouths of these tubes that the newly-formed dentine is added. This is generally very transparent, the tubes being few in number, very irregular, and furnished here and there with dilatations. When, however, it reaches as far as the centre of the pulp cavity, it may assume the appearance of that kind of structure which will hereafter be described as resulting from *ossification* of the pulp.

"Another form under which calcification occasionally occurs, is that of a nodular mass attached to the inner surface of the tooth, and projecting into the pulp cavity, *Fig.* 11. The writer has not been so fortunate hitherto as to meet with an example of this kind, and is indebted to a paper of Mr. S. J. Salter's, published in the 'Transactions of the Pathological Society' for 1855, for the following abstract of a case which that gentleman has recorded, and also for the accompanying drawing. The tooth was a central incisor, which had been extracted from a woman on account of severe neuralgic pains, obviously connected with one of the central incisors of the upper jaw. The pain was described as of a gnawing character, abiding, but not constantly severe, frequently amounting to a mere consciousness of the presence of the tooth, and at other times sharp and darting. In the former condition it was confined to the region of the tooth; in the latter, it flashed up the side of the face, and through all the branches of the superior maxillary division of the fifth nerve of that side. Sudden pressure or a tap upon the tooth, or a marked change of temperature, produced a considerable augmentation of pain. The tooth itself was sound, to all external appearance; it was somewhat elongated beyond its fellow, and was very slightly loose. The gum surrounding it was red at the edge, and a little swollen. When the tooth was removed, no exostosis was discovered on it; and with the exception of some small patches of half-organized lymph, it appeared quite healthy.

Fig. 11.



"Upon making a vertical section of the tooth from side to side, an oval pear-like excrescence of dentine was found growing from the side of the pulp cavity, so as to encroach much upon it, and occupying for a short space more than half its diameter. It was of an oval form, its long axis corresponding to that of the tooth; in color less opaque, and yellower than the neighboring tissue.

"The structure was of that irregular character which has been previously described as occurring in secondary dentine, which has arisen from the wearing away of some part of the tooth's surface. The removal of the tooth was accompanied with a violent paroxysm of neuralgic agony, but was followed by a total cessation of pain, and the cure was permanent.

"The next point to be considered is that which forms the most important portion of the present communication, namely, as to what are the changes which caries produces in the interior of the tooth. If a section is made of a tooth in which caries is only just commencing, a dark-brown stain is visible on the external surface of the dentine. When such a section has been properly prepared, and is examined beneath the microscope, other changes become evident. Where the caries is slight, the tubes of the dentine are seen to have become transparent immediately beneath the diseased part, in consequence of their having become consolidated by the deposition of calcareous matter. Very frequently this transparency is continued down the whole length of the tubes as far as the pulp cavity, and the latter has become encroached upon by the addition of fresh dentine to the original structure of the tooth. In fact, these changes are much the same as those which have been previously described when speaking of the other causes which affect the integrity of the outer surface of the tooth. That this is partly the means by which nature endeavors to prevent the ultimate destruction of the tooth can scarcely be doubted. Specimens are constantly met with in which the decay has extended to a great depth on the crown, but has failed to reach the pulp cavity, in consequence of the addition of secondary dentine to the interior of the tooth in the way which has been already noticed.

"I would here remark that, besides the general term *Secondary Dentine* applied to these new formations, some writers have also proposed to distinguish the dentine originating under the various circumstances which have just been enumerated by specific names. Thus, that which is formed under the influence of caries, or by the pressure of a wire or clasp, has been named *Dentine of Repair;* where the structure is very irregular, and if there are Haversian canals, it has been termed *Osteo-dentine;* and Mr. Salter has proposed the term *Nodular Dentine*, where the new structure forms projecting masses, as in the case which has been selected from that gentleman's paper. I venture, however, to think that this is a somewhat unnecessary multiplication of terms. The histological characters of these formations pass into each other imperceptibly; and I do not think it would be possible, in general, to say under which of these circumstances a portion of secondary dentine had originated. It would, therefore, be sufficient if the one term *Secondary Dentine* was applied indiscriminately to the new structure which arises under the several conditions that have been mentioned.

"In addition to the changes superinduced by caries in the dentinal tubes, and the formation of new dentine in connection with the original tooth structure, the pulp itself undergoes some very interesting and important modifications.

"The presence of small osseous particles in the cavity of the teeth had been noticed by Bertin, Rousseau, Oudet, and others, more especially in the molar teeth of the Hare, Sow, and Stag. The most accurate description of these formations is given by Raschkow, who describes them as 'semi-transparent, for the most part oval and rounded bodies, which were situated in the axis of the dental pulp toward its apex, in irregular rows, never extending the whole length of the dental pulp, but only to a greater or less distance from the coronal extremity. Such examinations of the dental pulp are facilitated by the use of the compressor; but without its assistance the same results may be obtained, though with more trouble.'*

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* Nasmyth's Historical Introduction, p. 139.

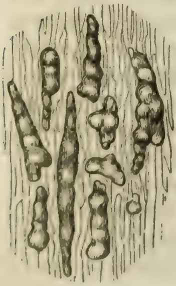
"In the Human subject, the matter has been very ably treated by Mr. Salter, in one of his papers in the 'Guy's Hospital Reports.' The important point in Mr. Salter's communication, and which he has been the first to direct attention to, is the different manner in which these masses of ossific matter are formed, when compared with those varieties which have been previously described under the title of *Secondary Dentine.* In the formation of the dentine of the tooth, and also in that which has been named secondary dentine, the nerves and blood-vessels recede from the part in which dentification is proceeding, and it is only the cells of the pulp which are concerned in the process: on the contrary, in the formation of these nodules of ossific matter in the substance of the pulp, all the elements which enter into the formation of this organ seem to be included; and there results an ossification, which includes alike the nucleated cells, the connective tissue, the blood-vessels, and the nerves. This process, therefore, differs essentially from that which results in the formation of secondary dentine, and may be correctly termed *Ossification* or *Calcification* of the dental pulp. The best mode of examining the ossified pulp is to add a small quantity of caustic potash or soda, which, while it renders the parts more transparent, at the same time causes the nerves to become more distinct; the latter can then be traced up to the osseous mass, and are seen to enter it, or to become involved in it, and again to emerge from it. Mr. Salter correctly says that almost every carious tooth will be found to have its pulp more or less ossified, but I cannot agree with him when he says that it occurs most frequently and to the greatest extent in the fangs. I believe, myself, that the point of greatest ossification occurs nearest to the carious part, and that this process continues to go on so long as inflammation has not been set up in the pulp to such an extent as to produce disorganization of the part. This will, perhaps, be best illustrated by the following note of a carious tooth.

"The patient was a gentleman aged twenty-five. The first lower molar on the right side was considerably decayed on its median surface. The decay had commenced on the grinding surface of the crown, and penetrated inward toward the pulp. The teeth were rather crowded, and the white, opaque appearance of the enamel next the bicuspid tooth indidicated the extent to which the decay had extended and destroyed the subjacent dentine.

"The tooth was extracted without more difficulty or more pain than usual, and there was little or no inflammation around the fangs.

"*Examination of the Tooth.*—The decay extended to the pulp cavity, and the median third of the crown was more or less affected by caries. The tooth was then broken open and the pulp examined. It was of a pinkish color, and somewhat more vascular than usual. On endeavoring to withdraw the pulp from the cavity, at the part which was directly under the carious portion there was found a solid lump of osseous matter as large as a canary seed, and something less than a grain in weight: it was not adherent to any part of the inner wall of the tooth. On examining the remainder of the pulp beneath the microscope after the addition of a solution of caustic soda, it was seen to be thickly crowded with rounded masses of dentine, but more opaque and of a different character to the dentine globules of Czermac. The drawing (*Fig.* 12) represents the appearance presented by this portion of the pulp.

Fig. 12.



"In some specimens nearly the whole of the pulp becomes ossified in this manner, but the newly-formed bone forms no union with the crown of the tooth. In other specimens the process is found to have commenced in contact with the original dentine, and to have succeeded to a great extent in filling up the pulp cavity. This is what has taken place in the central part of the pulp cavity in Fig. 8. The upper portion of this section has already been described as consisting of *Secondary Dentine;* but after awhile the pulp ceased to form dentine, and became converted into a very imperfect kind of osseous structure. The greatest portion has a granular appearance, without exhibiting any very definite arrangement. At some parts there is a net-work of dark, calcareous matter, looking as if it had resulted from the calcification of a cellular structure, and bearing a close resemblance to that pathological condition of the artery which has been described as *Cretification.** At other times the pulp ossifies in large globular masses, which have a laminated arrangement, with a central spot around which the ossification has taken place.

"I have thus endeavored to give a general summary of what is known with regard to the processes concerned in the formation of *Secondary Dentine*, and of that which may be correctly termed *Ossification* of the pulp. I am quite aware that these changes have at different times and in various publications been described by previous writers, but I have nowhere found that any practical application has been made of them. In none of the works on Dental Surgery with which I am acquainted have I found any indication that we should rely upon the remedial process which is thus set up by nature in our treatment of caries.

"Of late years the attention of the profession has been turned rather to the best means of destroying the pulp in advanced caries, and subsequently stopping the tooth, instead of endeavoring to preserve the integrity of the pulp, and thus retaining as far as possible the vitality of the tooth.

"There can be no question, if it is possible to preserve the pulp of a tooth, and then stop it, that such a tooth is in a far more healthy condition than where the interior of the crown and the fang is filled with gold or any foreign material. I am fully convinced that many of the teeth which of late years have been treated by destroying the pulp, might, under another mode of treatment, have been preserved without sacrificing this essential portion of the organ. So long as there is a layer of dentine existing over the pulp, as a general rule it should never be removed, even if the dentine is softened nearly to the surface of the pulp. I have found in many cases that, by a palliative method of treatment, teeth which would otherwise have been sacrificed, may by this means be preserved. If caries, so far as the actual destruction of the dentine is concerned, is a purely chemical process, it is at all times in our power to put a stop to these chemical changes by the application of proper remedies, and by protecting the decayed part from the action of the fluids of the mouth. Once these chemical changes have been arrested, there seems to be no reason why the remainder of the dentine, even if it is partially impaired, should become a source of irritation to the pulp. One case may be mentioned in illustration. The patient was a female, aged twenty-four, enjoying moderately good health. The first molar in the lower jaw was much decayed on its distal surface, the caries reaching quite to the centre of the crown. There had been an uneasy gnawing sensation in the tooth, and pain in eating. The interior of the decayed tooth was very tender, and required great care in removing the particles of food. A temporary stopping, made of cotton, with a solution of mastic in spirits of wine, was put in, and renewed two or three times in the course of a month. On each occasion, when the cotton was removed the tenderness was greatly diminished, and some of the decayed portion of the tooth was taken away. The cavity was afterward filled with cotton and spirits of wine for some time, and at the end of about two months the tooth was permanently stopped. The first upper bicuspid on the right side was in a still worse state, and there appeared but little hopes of saving it; but after similar treatment for the same length of time, it was permanently stopped. For a day or two, there was some tenderness in this tooth; but this subsequently subsided, and the tooth still continues an efficient agent in mastication. The lower wisdom tooth on the right side of the mouth, and the upper wisdom tooth on the left, were also decayed. The first of these teeth was not so far gone, and was readily stopped after a short preparation; but the upper wisdom tooth had lost nearly the whole of the central part of the crown, and on one or two occasions, while it was under treatment, gave rise to a short and moderate attack of toothache; yet at the end of three months the tooth was also capable of being stopped. Any other mode of treatment in three of these teeth would, I believe, have necessitated either the destruction of the pulp or the extraction of the tooth.

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* See Wedl's *Pathological Histology*, p. 227, fig. 51 c.

"That there is nothing very novel in the above plan I am ready to admit, and doubtless others have adopted the same method of treatment; but what I venture to assert is, that such treatment has not been carried on upon any definite system, or for the purpose of allowing nature to convert the pulp of the tooth into osseous matter, and thereby repair to the best of her power the ravages which have been inflicted by disease upon the tooth.

"There is one question connected with ossification of the dental pulp which I should have been very desirous of determining, had it been in my power, before writing the present paper; and that is, the rate at which it proceeds. It requires, however, not only a very extended series of cases, but also the conjunction of some fortunate and special circumstances, to enable us to determine this question, and I would invite the attention of members to the investigation of this very important and interesting point in dental pathology.

"In conclusion, I would remark that another practical point connected with the processes of the formation of secondary dentine and calcification of the tooth pulp, is the possibility of these changes giving rise to neuralgic pains about the head and face. In the case which has been recorded in the course of the present paper, these pains depended upon a nodular mass of dentine pressing upon the pulp; but when we find that in the ossification of the pulp the terminal branches of the nerves are also involved in the new formation, it is possible that this process should also give rise to similar symptoms. A tooth extracted under these circumstances might, to all external appearances, be perfectly sound; and even if it were broken open, unless the pulp was examined by the microscope, the minute granules of ossific matter might pass undetected."

PERISCOPE OF MEDICAL AND GENERAL SCIENCE IN THEIR RELATIONS TO DENTISTRY.

BY GEO. J. ZIEGLER, M.D.

"*On the Modifications which take place in Divided Nerves; and on the Intrinsic Properties of the Spinal Cord.* By M. CLAUDE BERNARD. The recurrent sensibility of motor nerves—that singular property which invests them with powers of sensation almost as vivid as those enjoyed by the posterior roots themselves—has now been fully discussed, and the corresponding experiments have been performed in your presence. You have witnessed the immediate results of a transverse section of the spinal roots; it now remains for us to consider the modifications which arise in the truncated extremities of the divided nerves, a subject of solemn importance to the physiologist, as well as to the practical observer.

"When the nervous trunks have been completely mangled with the forceps, or otherwise disorganized, a total atrophy is the consequence; but such is not the case when they have merely been cut through with a sharp instrument; we then see one of their extremities grow thicker, and remain permanently tumefied, while the opposite extremity is gradually atrophied, and disappears altogether at last. But a singular difference is found to exist, in this respect, between the two orders of nerves: in the motor roots, the central extremity is that which continues to receive the vital stimulus, while in the sensitive roots the reverse takes place; the peripheric extremity of the divided nerve is enlarged, while its central portion is totally atrophied up to its primitive origin within the depths of the spinal cord. The results of clinical observation agree with these facts; for in patients who die shortly after undergoing an amputation, the autopsy reveals a similar change in the terminal portions of the cut nerves. In certain cases, the patient having survived the operation, the postmortem examination takes place several years after the event, and the modifications then ascertained to exist may be viewed as changes of a permanent nature. Now the nerves are always found, in such cases, to end in a small ovoid tumor, which probably results from the enlargement of the motor fibres; for when a compound nerve is divided and left to itself, both extremities are in this manner hypertrophied; the motor fibres concur in the development of the central portion, and the sensitive fibres in that of the peripheral extremity. Some authors, however, are of opinion that the neurilemma is in both cases the real source of this peculiar enlargement.

"The interesting experiments of M. Waller are in perfect concordance with our own views; for, after having divided in the cervical region the sensitive and motor roots of several pairs, this gentleman examined them under the microscope, and was enabled to ascertain that twenty-four hours after the operation the posterior roots were already become opaque, and exhibited a granular appearance, offering, in short, exactly the same alterations as after death; the atrophied nerve, in fact, gradually decays from mere want of nutrition.

"Nor is it less interesting to examine the changes which occur in compound nerves, when they have been divided. It is a well-known fact that in man, as well as in the lower animals, the paralysis which results from the section of a nerve is only transitory, and that sensibility and the power of voluntary motion are gradually restored to the injured parts. When, for instance, the fifth pair has been divided, in patients suffering from facial neuralgia, a temporary cure is effected; but after a short lapse of time the nerve heals again and recovers its former properties, as the reappearance of lancinating pains too well evinces. In all such cases a partial atrophy of the nerve at first takes place; its elements are then reproduced, after passing through all the successive stages of embryotic development,—a fact which the labors of modern micrographers have now proved beyond the possibility of a doubt.

"But when the nervous roots themselves—not the compound nerves which result from this junction—have become the seat of surgical injury, it may well be doubted whether a similar reproduction is possible. The numerous experiments which we have repeated in dogs enable us, however, to answer in the affirmative. Sensation and motion both return in the paralyzed regions, even after a considerable loss of substance has been sustained; and the operation frequently performed on the fifth pair affords an additional proof of this. In order to prevent the extremities of the nerve from uniting again, the surgeon frequently removes a large portion of the diseased trunk, yet the subsequent insensibility disappears after a certain time,—a proof that sensitive as well as motor or compound nerves enjoy the property of regenerating lost tissue.

"We must now pass to a different subject; the intrinsic properties of the spinal cord, as distinguished from its physiological functions, equally deserve a share of our attention. The time is not distant when anatomists were unanimous in proclaiming this central axis to be a mere agglomeration of nervous fibres; and, in order to reconcile this opinion with facts, various attempts were made to calculate the respective bulk of the spinal cord, in its principal regions, and that of the nervous pairs which spring from or return toward it; but the dimensions of the former being vastly inferior to the sum representing the total amount of the latter, it was suggested that the difference was probably compensated by the absence of the neurilemma in the fibres contained in the central portion of the system,—a protective envelope being of course rendered unnecessary by the powerful means which nature has adopted to insure the security of the spinal cord. The direction of these fibres within the cerebral substance itself became a subject of inquiry, and a variety of contradictory opinions were, as usual, brought forward on this subject. The doctrine on which all these notions rest, and which consists in believing the nervous fibres to be continuous from one end of the system to the other, was merely an extension of the views entertained by Sir Charles Bell himself. We have already shown you that this eminent anatomist divided the nerves into three great classes,—sensitive, motor, and respiratory; the latter representing, of course, the nerves which preside over involuntary motion. In fact, the type of this latter class, as selected by Sir Charles Bell, was that branch of the third pair which regulates the involuntary contractions of the pupil. The efforts of our contemporaries were therefore mainly directed toward the precise determination of the cerebral origin to be assigned to these different kinds of nerves, but more especially those belonging to the two first classes.

"The vivid light which recent discoveries have thrown upon the structure and properties of the nervous system has entirely dispelled these erroneous interpretations of anatomical facts. The brain, the spinal cord, and the peripheral ramifications which connect them with the surface of the body are no longer considered as successive portions of the same great apparatus, but as organs totally distinct from each other; and, notwithstanding the juxtaposition of these different parts, their fibres are no longer held to be continuous.

"These premises being laid down, let us proceed to examine the properties of the spinal cord with reference to the faculty of perceiving impressions from without. That physiologists should differ in their views on this subject, will certainly not astonish you. Have we not seen how different the results of the same experiment may prove to be, when the conditions in which it is performed by various observers do not happen to be identical? The controversy which formerly arose with respect to recurrent sensibility affords a notable instance of this.

"An experiment which, considering the novelty of its results, may fairly be viewed as one of fundamental importance, is due to M. Van Dell. The spinal cord being laid bare in a considerable portion of its extent, is found to enjoy a high degree of sensibility in its various parts, more especially so in its posterior tracts; provided always that proper precautions have been taken not to exhaust the animal's strength. Let the posterior roots now be divided within certain limits: the corresponding region of the spinal cord will be found to be totally insensible, while the power of sensation persists in its remaining parts, which have not been deprived of their sensitive nerves. The conclusion which evidently results from this decisive trial is, that the sensibility of the spinal cord is exclusively derived from the minute ramifications which it receives from the posterior roots.

"The ingenious author of this experiment believes the peripheral nerves, which arise from the cells contained within the spinal cord, to be alone endowed with the property of receiving impressions from external stimuli, while the central axis exclusively perceives the phenomena of nervous action; in other words, although cold, heat, electricity, and other external agents produce marked effects upon the peripheral nerves, the spinal marrow remains indifferent to their action, but is highly excitable, when its own proper stimulus is applied. The impressions which it perceives are in every case the result of nervous vibrations, (if we may be allowed to use the expression.) In this manner alone does it perceive outward impressions, and transmit them to the encephalic mass; and it may in this respect not unaptly be compared to nerves endowed with a special sense. Allow us, for instance, to remind you of Magendie's experiments on the retina: he destroyed it in animals, without provoking the slightest manifestation of pain; he pricked it twice in the human subject in the course of an operation for cataract, without the patient's perceiving the experiment of which he unconsciously became the subject. The sensation produced by the division of the optic nerve, in cases of total extirpation of the eyeball, is that of intense light, but the patient feels no pain. The retina, the optic nerve, are instances of highly sensitive organs which remain indifferent to the action of ordinary stimuli; light alone exerts a powerful action over them. Entirely similar to these are the special properties of the spinal cord. External agents, when they come in contact with it, do not arouse its dormant powers; it is only capable of receiving second-hand impressions, so to speak.

"We shall therefore start in future from this principle,—that the nerves are organs which extend from the surface of the body to the central parts of the system, and go no further; and that the spinal cord, as well as the brain, is endowed with properties entirely different from those of the nerves implanted upon it."—(*Med. Times and Gazette.*)

On Cerebral Symptoms independent of Cerebral Disease. By Chas. West, M.D.—The following, from an able lecture on this subject in the *Medical Times and Gazette*, is replete with instruction: "At various epochs of development, symptoms not unfrequently appear which excite apprehension of cerebral disease, such symptoms consisting chiefly in altered disposition, in intellectual dullness, in irritable temper; but we shall, I think, usually interpret their meaning rightly by observing two things. They are moral and intellectual, much more than physical, in their nature, and they either coincide with, or follow, some definite stage of bodily development, such as the second dentition, or, in after age, the first efforts at pubescence, while, moreover, they are too variable, both in kind and degree, to tally with the indications of any definite organic disease of the brain itself.

"Similar symptoms occur sometimes as the result of overtasking of the mental powers; and this not always by work excessive in itself, but excessive with reference to the then condition of the child, who may at one time be unequal to the amount of work which, a few months before, it was able easily to accomplish. The nature of the child's studies, too, sometimes overtasks its powers even more than the number of hours devoted to them, and, in such circumstances, the mere altering their nature, even though unaccompanied with any diminution in the time occupied by them, will often suffice to set matters completely right.

"It is usually in connection with the development of the system which accompanies the second dentition that we meet with the severe neuralgic headaches of dyspeptic children. The history of such cases is usually something of the following kind: A child whose general health has never been robust, whose nutrition is but imperfect, whose bowels are sluggish, and liver inactive, has occasional attacks of pain in the head; the pain is, for the most part, referred to the forehead, is attended with some intolerance of light, with sense of sickness, and, in some instances, with vomiting. It is usually very severe, so that the child seeks for perfect quiet, for a darkened room, and often asks to go to bed, where the attacks often subside after a short sleep, in the course of a few hours, though sometimes it is not until after a night's rest that they pass away completely. On the day after an attack, however, the child seems in his usual health, though slight overexcitement, overfatigue, or mental effort will reproduce the pain, as will any error in diet, or want of attention to the state of the bowels. Independently, too, of any exciting cause, the attacks are apt to come on spontaneously every fortnight or three weeks, and their frequent recurrence at length excites the apprehension of the relatives of the patient, who cannot believe but that such frequent returns of severe suffering must needs imply the existence of formidable disease.

"It is not easy to say how long, in any instance, these symptoms may continue. They are obviously dependent on the state of the general health, with the improvement of which they diminish or altogether disappear. The period of their most common occurrence seems to point to some connection between them and the general state of the system which accompanies the evolution of the teeth; but they do not seem dependent, as some convulsive affections of infancy and childhood appear to be, on the local irritation of one or two teeth in particular, ceasing as they pierce the gum. If I were to seek for an analogy, I should find it rather in that condition of the general health which in the girl at puberty accompanies the difficult and tardy development of the menstrual function, and which improves when that process is complete, and the function fully and regularly established. In confirmation of this view, I may add, that while in the boy it is very unusual to observe this headache occur at the period of puberty, in the female sex the same kind of suffering not seldom recurs at that epoch, and sometimes, as we all know, continues in the woman even during the whole time of sexual activity, each recurring menstrual period being attended by intense headache, with much gastric disorder, though perhaps with little uterine pain, sometimes, indeed, with no pain at all referred to the sexual organs.

"Pain in the head, accompanied with more or less intolerance of light, sickness, and constipation, are, as I scarcely need remind you, the symptoms that ordinarily usher in tubercular hydrocephalus; and though the knowledge of the public is inaccurate, they yet have a vague notion that such as these are the ordinary accompaniments of water on the brain, and they will come to you for a solution of their doubts, and a relief of their apprehensions. Now, I confess that, in many instances, the off-hand answer which is most desired is impossible; while, unluckily, there is no infallible criterion by which the caution suggested by wise observation can be distinguished from the hesitation of untaught inexperience. Anyhow, it is worth while to have impressed on your mind the fact that the symptoms I have just enumerated do not *always* have so grave an import as commonly belongs to them, and that it is worth while to pause in every case before assigning to them their most untoward meaning.

"These symptoms are for the most part observed a little later in life than the age at which tubercular hydrocephalus is most frequent, and they usually coincide with the progress of the second dentition. Further, although they are generally observed in children whose digestion has been liable to frequent disorder, and who are comparatively ill nourished, the headaches are not preceded by that progressive loss of flesh or deterioration of the general health, which, in many cases, though confessedly by no means in all, precedes the development of acute hydrocephalus. Moreover, it will often be found that the headaches have continued to recur at intervals for weeks or months before the patient came under your notice, and that yet no progressive deterioration has been taking place in the child's condition, that the headaches are not more intense, that no fresh symptom of cerebral disorder has supervened; but that such as they were months before, such they continue still. The attacks of headache themselves present some characters by which they may be distinguished from those whose import is more formidable. They are not attended with any remarkable increase of heat of head, nor with any marked pulsation of the carotids. The pulse, though quickened, is rarely unequal or irregular; the bowels, though constipated, answer comparatively readily to aperients; actual vomiting is unusual, and the nausea even rarely outlasts the seizure. Stimulants, too, not unfrequently relieve the pain, instead of aggravating it, and though excitement or overfatigue may have brought on the attack, yet a tale that interests or arouses the child, or any occurrence which brings to it much pleasure, often dissipates the pain completely; while, moreover, the spirits in the intervals become as buoyant as ever, and continue so until the next attack, a marked contrast to the anxiety and depression which often precede for weeks or months the onset of the acute stage of tubercular hydrocephalus.

"Pure neuralgia, like the neuralgic headache of the adult, though less common than this sick headache, if so I may term it, is yet sufficiently frequent to need being borne in mind, when the question arises as to the import of symptoms supposed to indicate cerebral disease. The headache in these cases is usually frontal, and care is therefore the more necessary since there is no doubt but that continued frontal headache is a very frequent accompaniment of organic disease of the brain, and especially of tubercle of that organ. The severity of the pain, the suddenness of its onset, the completeness of its cessation, the fact that its recurrence for days is attended by no progressive deterioration in the patient's condition, all furnish a clue to its real nature. Moreover, its supervention after exposure to malaria, and a certain ill-marked periodicity in its return, are circumstances which will serve in many instances, no less than the absence of other signs of disease of the brain, to guard against too hasty or too positive an expression of an unfavorable prognosis. * * *

"We are all so familiar with the occurrence of convulsions during the first dentition, that in infancy the risk is rather of the grave disease to which they are possibly due being overlooked, than of the influence of teething in their production being underrated. On the other hand, the occasional share of the second dentition in exciting epileptic or other convulsive seizures is too little borne in mind, and a graver prognosis than the event justifies is sometimes expressed in consequence.

"In a little work on Dentition, published some years ago by my friend and former colleague, Dr. Ashburner, there are many cases related illustrative of this fact. Of these I will select the following:—

"'A boy, twelve years of age, was cutting the second or posterior permanent molars of the upper jaw before those of the lower, and the process was accompanied by twitchings of various parts of the body. At last he became affected with chorea. Being a very nervous lad, if any notice were taken of him, he would quite involuntarily make the most extraordinary faces, and contort his body into various attitudes that appeared to be most difficult and painful. This chorea continued for three months, during which time a variety of medicines were swallowed. At last he fell into an epileptic fit, struggling much, foaming at the mouth, and grinding the teeth. I thrust my forefinger along the inside of his cheek, and found a hard, cartilaginous space on each side, behind his first molar tooth. I succeeded in gashing these parts. He uttered a scream and fell out of his fit, becoming quite sensible, nor had he a recurrence of his chorea.'

"So sudden and complete a cessation of symptoms on the removal of the mechanical irritation produced by the pressure of a tooth is decidedly an unusual occurrence. In by far the greater number of instances, the symptoms of disorder in the nervous system do not admit of being cut short thus suddenly and decisively; they depend not simply on the local irritation produced by one particular tooth, but, like the headaches which I spoke of at the commencement of this lecture, they are the result of the disturbance of the nervous system, to which the whole process of development has given rise, just as, in later life, the hysteria of the young woman is connected with the imperfect accomplishment of the sexual function, and is not removed by a single occurrence of menstruation.

"To this class of cases may be referred the history of a boy between eleven and twelve years old, whom I saw some years ago. While, apparently, in good health he was attacked by a fit one morning, in which his head was drawn to the right side. His face was distorted, especially its right side, and his right arm was in much more violent movement than his left. This fit was not preceded nor followed by sleepiness or headache, nor was it attended by any loss of consciousness, and the same characters were observed in all his subsequent seizures except one, which —the third in order of occurrence—was followed by temporary delirium for five or ten minutes. With the exception of the first and third of these attacks, all the others ceased in a minute, and the instant the spasmodic movements subsided, the boy resumed his former occupation, as if nothing had happened. Only once did more than one seizure take place in the course of twenty-four hours; but the intervals between two attacks were very irregular; sometimes eight days had passed without an attack, while, at other times, they recurred daily for three days; and, altogether, between the beginning of July and the end of December, more than fifty occurred, with no alteration of their character or increase in their severity, while neither the boy's health nor his intellect appeared to have suffered in any respect from the affection. One point observed with reference to them—which, I may add, is often noticed in cases of epilepsy—was, that they almost invariably happened soon after rising in the morning, generally between the hours of seven and nine o'clock.

"At first, he was actively purged, but with no effect; he then took the valerianate of zinc likewise fruitlessly; and then, as he was cutting the second molar tooth in the right side of the upper jaw, and as there was much tenderness of the gum over it, the gum was freely lanced, and all treatment was suspended. No amendment followed this measure, and the boy was, therefore, put for a time on the nitrate of silver, but with no results.

"The idea which had been entertained of the possible connection of the attacks with the process of dentition appeared to me still to be the most probable, and for the following reasons: That, in spite of the continuance of the attacks, there had been no such deterioration in the boy's condition as might have been expected if they had been dependent on cerebral disease; that no impairment of powers over the affected side had followed the attacks, while such an occurrence would have inevitably occurred if the attacks had been dependent on tumor or tubercle in the brain; that headache was completely absent, and all the general functions were perfectly well performed; while, further, the anomalous character of the attacks themselves seemed still further to point to some eccentric source of irritation.

"On looking into the boy's mouth, the teeth in the upper jaw were observed to be very crowded and overlapping each other; the first molar on the left side was decayed, the second molar was still beneath the gum. I advised the extraction of the decayed tooth, and lancing the gum over the second molar, while all medical treatment besides should be discontinued. Before these measures were adopted, the boy had six consecutive attacks in the course of one day; two of them being very severe, and attended, like ordinary epilepsy, with loss of consciousness. The extraction of the decayed tooth was followed by immediate diminution in the convulsive attacks, both in point of frequency and severity, and the improvement lasted for nearly two months. The second molar was then partly through the gum, when a succession of seizures, some of them accompanied with loss of consciousness, once more took place. Free lancing of the gum was succeeded, as before, by immediate improvement, and not only so, but the tooth being now quite through the gum, all spasmodic movements of the arm ceased, and occasional slight twitchings of the face were the only relics of symptoms which had seemed so formidable.

"One caution which this case suggests, I cannot forbear to offer, although it is not immediately connected with the subject of this lecture. It relates to the possibility of attacks of this nature, and still more of those of a more decidedly epileptic character, becoming permanent as the mere result of frequent recurrence, and this quite independently of the existence of any organic mischief in the brain. Thus, I have seen instances in which the convulsions that originated in hooping-cough have outlasted the disease that occasioned them, and the fits which at first were due to some error in diet, reproduced again and again by similar though perhaps smaller indiscretions in the same respects, until they became at length habitual. Each fit, too, leaves the child more predisposed to its recurrence, and from slighter and still slighter causes; so that never is the old Latin adage, *Obsta principiis*, more important than in the case of the convulsive diseases of early life."

"*Removal of nearly one-half of the Maxilla Inferior for Necrosis.—Complete Bony Restitution and Restoration of the Functions of the Jaw.*—About the middle of September, 1859, Lizzie Reardon, aged five years, residing at 109 Hamilton Avenue, was admitted into the Long Island College Hospital, under the care of John G. Johnson, M.D. Three months previously, her mother had taken her to a dentist, who, according to all accounts, in removing a tooth, fractured the jaw. Swelling of the face on the injured side ensued; the other teeth loosened and fell out. Abscesses formed along the bone, both within the mouth and on the cheek, and were lanced. At the time she was presented to the hospital, a necrosed portion of bone was projecting through a sinus of the chin. Two front incisors were the only remaining teeth on the affected side. The face was greatly swollen. A fistulous opening at the angle of the jaw communicated with necrosed bone, and two others on the ramus; several also on the inside of the mouth communicated with dead bone.

"The case was examined by the surgeons in attendance, who advised the removal of the carious bone; slight traction with the forceps applied to the projecting point of bone was sufficient to separate the coronoid process from its articulation, when it was found that the whole bone of that side was necrosed. The sinus at the chin was enlarged. The handle of a scalpel being crowded along the body of the bone, the periosteum was separated from all its attachments. Traction was again made upon the projecting point of the bone, and the condyle was brought down to the fistulous opening inside of the mouth. This sinus was enlarged, and the whole of that side of the jaw was drawn out through the mouth with very little more difficulty than would be experienced in removing a molar tooth—the only incisions having been that on the chin of about half an inch, and the one on the inside of the mouth an inch in length. The portion of the bone removed was the entire left half of the jaw, excepting the portion in which the two front incisors were. Simple water-dressings were applied, and tonics administered. The swelling rapidly subsided, and as the face became smaller the jaw was drawn toward the diseased side, there being nothing on that side to resist the action of the muscles. She was brought to the hospital for about six weeks, during which time the reproduction of bone advanced with rapidity. About one year subsequently she again came under observation for some slight complaint. The restitution of bone was complete. The articulation was perfect, and with the exception of the loss of the teeth, she could use the jaw as well as if it had never been diseased. There is no undue sensitiveness about the jaw, and a dentist can easily fit a plaster to the new formed bone with a complete set of teeth for that side. She is in other respects a perfect picture of health. A case similar to this is published by Prof. E. S. Cooper, of San Francisco, in the *Medical Times* for February 23, 1861. In his case, a girl of seven, necrosis followed ptyalism, and he removed nearly the whole of the left half of the inferior maxilla in the same manner. These cases are of interest from the slight causes which will produce the necrosis of so large a portion of bone in the young subject, and the facility with which new bone is formed."—(*Amer. Med. Times.*)

Extinct Geological Monsters.—The following is from the *Printer.* It is evidently a reprint, but we are unable to give either its scriptorial or bibliographical paternity.

"* * * We will conclude our sketch of the principal mesozoic saurians by a brief notice of two land lizards of enormous size—the *Megalosaurus*, which was originally discovered in the Stonefield slate, near Oxford, and the *Iguanodon*, found by the late Dr. Mantell, in the Wealden formation of Tilgate Forest, in Sussex. The former of these creatures was carnivorous, and attained the length of forty or fifty feet. The latter even reached seventy, but was herbivorous. The head of the Megalosaurus terminated in a straight and narrow snout, armed with teeth of the most formidable character, combining the properties of the knife, the sword, and the saw. When first protruded from the gum, the apex of each tooth presented a double sword-edge of serrated enamel; but as the tooth advanced in age, it took a curve backward, like a pruning-knife, the saw-like edge being continued on the concave side of the very root, while the convex side became blunt and thick, just as a cutler makes the back of a knife-blade thicker for the purposes of increasing its strength and steadiness—the backward curvature of the teeth, of course, acting as a barb, effectually preventing the escape of all animals once seized in the jaws. The diet of this creature appears to have consisted of the smaller saurians, whose remains abound in the same strata with its bones; and the piercing, crushing powers of its dental apparatus must have been equal to dispose even of a veteran crocodile. The Iguanodon appears to have been closely connected with its living congener, the Iguana, an inhabitant of the warm regions of America. The conformation of the teeth is nearly identical in both, and both were distinguished by a horn or bone upon the nose. But the living Iguana, which does not exceed the length of five feet, lives chiefly in trees, feeding on fruit, seeds, and leaves, although the female, from time to time, visits the water for the purpose of laying her eggs in the sand. But climbing trees was of course out of the question for a monstrous creature of probably seventy feet in length, and with limbs far exceeding in bulk those of the largest elephant; for an existing thigh-bone is, in its smallest part, twenty two inches round, and must have been, when perfect, between four and five feet long. Yet, the dental arrangement being the same in the fossil and the living animal, the nature of the food must have been the same for both; and, accordingly, we must suppose that the Iguanodon reared itself up against the trees, which were its contemporaries—huge palms and tree-ferns—and despoiled them of the coarse, rough tops, which no teeth less effective than its own could have masticated. This supposition is confirmed by the massiveness of the hinder limbs, and the shortness and thickness of the tail, as compared with that of the Iguana. But the great peculiarity of both these creatures is the shape of their teeth, which may be compared to the pincers used in cutting iron wire, with a simple but effectual provision for the continual maintenance of a sharp cutting edge. This is a thin plate of enamel, placed only on the fore part of the tooth, as in the incisors of the rat. The softer material wearing away more rapidly in proportion to its distance from the enamel, an oblique section of the crown of the tooth is constantly preserved, with a keen edge in front."

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"*College of Dentists of England.*—DR. RICHARDSON delivered the first of a course of three lectures on the 'Salivary Glands and Saliva,' before the members of this college on the evening of Tuesday, the fourteenth instant.

"After a few introductory remarks, Dr. Richardson gave a general outline of all the glands of the body, showing their natural division into secreting and non-secreting glands, and their classification according to position, structure, and function. He first described them as belonging to great tracts, including a comprehensive enumeration of all the glands. He then gave a general idea of the construction of glands, remarking especially on the great law, that in the construction of glands as much blood as is possible is brought to a point by blood-vessels, and exposed to the largest possible secreting or elaborating surface. He also dwelt on the importance and peculiar influence of nerves in regulating the supply of secretion in glandular structures.

"After concluding the anatomical, structural, and physiological classification of glands, in which he devoted special attention to the organs of insalivation—the parotid, submaxillary, and sublingual glands—Dr. Richardson took up the question, why individual glands should produce 'specific secretions;' explaining the primary facts—that the blood is the source of every secretion; that the power of 'special secretion' does not lie in the 'mechanism of a gland;' and that the whole process of secretion is evidently conducted through the agency of some chemico-physical relationship existing between cells and blood."—(*Lancet*, May 25, 1861.)

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"*On the Application of Cyanide of Potassium in Soldering Metals.* By DR. AUGUST VOGEL.—In the operation of soldering metals, it is very essential to keep the metallic surfaces to be united clean and bright, so that the solder may adhere firmly when in a melted condition. For the purpose of protecting the metallic surfaces from the oxidizing action of the atmosphere, certain fusible substances are usually rubbed on with the solder, and immediately form a thin layer over the surface of the metal. These substances produce, however, not only a protective, but also a reducing action. In practice it is sought to insure these two essential conditions in the choice of the substances generally employed, viz., for soft soldering, resin, turpentine, olive oil, powdered sal-ammoniac, mixed either with oil, or with tallow and resin, or a very concentrated solution of chloride of zinc. For hard soldering borax, or a melted mixture prepared from borax, potash, and common salt, and, in the special case of iron, pounded green glass is generally used.

"It is well known that the substances above mentioned fulfill to a greater or less extent these two conditions of soldering, viz., deoxidization and protection of the metal from the atmosphere. A material possessing these two qualifications in the highest degree would, of course, best effect this purpose. As the result of a great number of experiments, I have come to the conclusion that the ordinary commercial quality of cyanide of potassium possesses decided advantages in this respect over all other substances. It melts very readily, covering the surface of the metal with a very efficient protective layer, and at the same time is known to exert a strong reducing action, a property which has gained for it many important applications both in technical and analytical chemistry.

"Cyanide of potassium will be found particularly useful when the surfaces to be soldered cannot be thoroughly brightened. It is difficult, and sometimes impossible to solder metals when their surfaces are at all corroded, or when they are incapable of bearing the high temperature necessary in this operation, with the ordinary agents, on account of their inferior reducing power; but cyanide of potassium, from its extraordinarily energetic action, is able to deoxidize all rusty particles standing in the way of the perfect union of the solder with the metal.

"The mode of applying the cyanide of potassium in soldering is the same as with borax. Some powdered cyanide of potassium is kept ready at hand in a well-closed glass bottle, and sprinkled over the metallic surface after it has been slightly moistened. In some cases of soldering at very high temperatures, which, by practice, are soon ascertained, it will be found expedient to use a compound of borax and cyanide of potassium, for the purpose, on the one hand, of increasing, by this addition, the small reducing power of the borax, and, on the other hand, of diminishing the volatilizing tendency of the cyanide of potassium.

"Another reason for preferring the employment of this agent is, that during the operation no corrosive vapors capable of acting on the soldering tools are generated, as is the case with chloride of zinc."—(*Chemical News.*)

"*Sacrificial Metals.*—A curious statement made in the House of Commons, a few days ago, induces us to offer a few remarks on what may be called, appropriately enough, 'the sacrificial function in metals.' It was stated, our readers will remember, that the leaden envelope with which the Armstrong shell is surrounded, and which is absolutely necessary as a constituent part of that missile, might be caused to adhere securely, either by 'a sort of mortise' or by the intermediation of zinc. The second expedient is that indeed adopted; with what amount of success the recent practice of these guns in China would disclose, were the Government not so pertinaciously bent on holding back the communications which have reached them on this matter.

"It is a fact perfectly well known to chemists, but one which mechanicians have not heeded nearly so much as it deserves, that when two metals are retained in contact, and conjointly exposed to chemical influences during long periods of time, one metal sacrifices itself to insure the other's preservation. The history of mechanical construction furnishes numerous illustrations of this chemical fact, as will be presently seen, when we come to cite a few examples; the marvel, then, is that Sir William Armstrong—or, rather, the laboratory branch of the War Department, before whose cognizance the proposition of zinc soldering (thus to designate it) must have come—could ever have sanctioned an expedient which must necessarily fail in the end, like every other expedient which violates a law of nature. The history of ships' copper sheathing shall be taken as our first illustration of the sacrificial metallic function. Sir Humphrey Davy, as is well known, devised a method of checking, or altogether obviating the destruction of ships' copper sheathing. He accomplished this by attaching to the ship's bottom, at suitable intervals, slabs of the metal zinc, and which he called protectors. Protectors they were, in the following manner: The zinc rapidly corroded, and was lost; but, so long as any zinc remained for the sea-water to act upon, the copper remained untouched. So far as copper preservation is concerned, the method adopted must be pronounced efficient. Practically, it failed, indeed, to secure the advantages described, but not for any reason that concerns us here. It was found that when copper no longer slowly dissolved, it ceased to be a poisonous metal. Barnacles and sea-weed attached themselves, just as they might have done to an uncoppered wooden bottom; and, moreover, owing to a galvanic action set up, the ship's copper was rapidly fouled by a deposition of magnesia and lime, precipitated from the magnesian and calcareous soluble salts always present in sea-water. Failing, then, to achieve what was intended of it, the copper-protecting process of Davy ceased to be employed; but the failure of it is that which alone concerns us here, as illustrating what we would wish to convey by the words 'sacrificial metal.'

"Take, as the next example, the illustration afforded by the setting of an iron paling-rail in a bed of lead. The most casual observation, as one passes along the streets of this city, may be made more pregnant with fact bearing upon this matter than the longest homily. For a time, varying as to length with locality, external influences, and—perhaps, in some degree—on the varying quality of the iron and lead brought into contact, both metals remain sound. But, after a time, decay inevitably sets in, and, when once commenced, marches to the issue of final destruction with wonderful rapidity. The remarkable fact is, that both metals do not decay simultaneously; it is the iron which corrodes, while lead—the softer metal—remains intact. Let the mechanician do what he will, this result cannot be prevented—a law of nature having decreed the sacrifice, it must and will be achieved.

"Our next illustration shall be ordinary tin plate—iron, coated with tin, as is well known. Well, what sort of destruction is set up when tin plate has been exposed for a long duration of time to the atmosphere? Is the tin destroyed—does it tarnish even? Never. Iron is the sacrificial metal here; and, as surely as the iron is anywhere exposed, it perishes, crumbles, and dissolves away with destructive rapidity. The rate of destruction of iron totally unprotected is slow, by comparison with that which ensues when, owing to a flaw or disintegration of the covering tin envelope, atmospheric agencies come into play upon the underlying metal.

"But the case we most particularly wish to direct attention to, is the result of bringing zinc into contact with iron, and retaining the two metals together over long periods, as may be seen in the so-called galvanized iron. Under this latter disposition, zinc becomes the sacrificial metal. Not one particle of iron decays, so long as atmospheric destructive agents can wreak their dissolution—so to speak—on the protective zinc. Nor does this protection altogether depend on a complete covering of the iron. Flaws and imperfections there are, and necessarily must be, through which, quite down to the iron, destructive agents, always present in the atmosphere, must penetrate. They do not act upon the iron, nevertheless, so long as a sufficient expanse of protective zinc surface remains; and this simply because a fundamental law of nature forbids their doing so."—(*Mechanics' Magazine*, and *Chemical News.*)

"*Court of Exchequer.—Liabilities to Dentists.—Lee* v. *Griffin.*—This was an action in which the plaintiff, a surgeon-dentist in Moorfields, sued the administrator of a Mrs. Penson to recover the sum of twenty guineas, as the price of two sets of teeth made for the deceased lady by her order. At the trial which took place some time since before Mr. Justice Crompton, the plaintiff stated that he received a verbal order from the deceased lady to make her two sets of teeth; that he took a model of her mouth, and some time after he wrote to her and asked her to make an appointment for an early day, as the teeth which she had ordered were ready for her. He also produced a letter which he said he had received in answer, in which, after merely thanking him for his kindness, the deceased lady said, 'My health will prevent my taking advantage of the early day.' The old lady died some time after, before the goods were delivered, and when the account was sent in to the defendant he disputed his liability.

"Mr. Justice Crompton expressed his opinion that this was not a sufficient memorandum in writing within the statute of frauds, and was about to nonsuit the plaintiff, when the plaintiff's counsel suggested that the plaintiff might recover under the count for work and labor and materials.

"The verdict was then entered for the plaintiff for twenty guineas, and the defendant had leave to move. A rule having been accordingly granted, Mr. Patchett now showed cause, and contended, on the authority of Clay *v.* Yates, 1 H. and N., 73, that when the skill of the artist was the chief ingredient in the value of the article he could recover for his work, labor, and materials. He also contended that the letter of the deceased referring to the plaintiff's letter, (the contents of which were proved by parol,) together made up a contract in writing within the statute of frauds.

"Mr. Justice Crompton said he was of opinion that the rule ought to be made absolute. There was no pretense for saying that there was any contract in writing within the statute of frauds, and, independently of that, as had been observed by Mr. Justice Hill, it was difficult to see what cause of action the plaintiff could have had, seeing that the contract was that the teeth were to be fitted to the lady's mouth, which they never had been. A question was raised at the trial whether this was a contract for work and labor and materials, or for a chattel to be sold and delivered. His lordship thought it was the latter, and, as there was no contract in writing within the statute of frauds, the plaintiff ought to have been nonsuited.

Mr. Justice Hill and Mr. Justice Blackburn were of the same opinion.—Rule absolute to enter a nonsuit.—(*London Lancet.*)

On the Composition of Steels.—In the report of a discussion upon this subject before the Academy of Sciences, Paris, it is stated (*Comptes Rendus* and *Chemical News*) that M. CHEVREUL made the following observations: "Independently altogether of science, two bodies possessing different properties have never been confounded; so that when an iron was observed which hardened on being suddenly cooled, it was distinguished from one preserving its original ductility after undergoing the same cooling influence. Thenceforward the name of steel was bestowed upon the first substance, to distinguish it from what is properly called iron, or, in other words, between steel, which tempering hardens, and iron, which tempering does not harden. Since the time of the revival of chemistry the difference between steel and iron was attributed to the presence of about a thousandth part of carbon in the former. Later, the influence of various bodies on steel was recognized. Berthier mentions chromium; Faraday and Stodart aluminium, platinum, and its accompanying metals; but the fact which to me seems of the greatest importance, is the method by which MM. Faraday and Stodart obtained from cast-iron some centièmes of iridium and osmium, which when analyzed yielded no trace of carbon. Setting aside the question whether steel is an indefinite compound of iron and one or several simple bodies distributed through the whole mass of the steel, or whether it is a definite compound of iron with one or several simple bodies distributed in indefinite proportions in the iron in excess of the elements of the definite compound, I conclude, from the whole of the facts I have stated, that in a chemical treatise steel in general must be regarded not as a definite compound by the nature of its constituent parts, but as a particular state of iron produced by the union of this metal with bodies, the nature of which is variable; and it is from this point of view that, after defining steel, independently of all scientific considerations, as an iron which is hardened by tempering, I discriminate in my fourteenth lesson on 'Chemistry applied to Dyeing,' published in 1829, p. 78:—

"1. Steels formed by iron and carbon;

"2. Steels formed by iron, carbon, and a third body;

"3. Steels formed by iron and some other body which is not carbon, or uncarbonized steels.

"The results of M. Fremy's interesting experiments are, it seems to me, easily connected with what is already known of steel, if looked upon from the point of view I have explained, instead of regarding them in the general way. It is now important to find out—1. Whether it is true, as Guyton says, that diamond dust will turn iron into steel. 2. Whether acieration can be effected without the intervention of nitrogen.

"M. Fremy said, in reply to the preceding observations, he was happy to observe the interest the Academy took in his inquiries on steel, and he thanked its members for the friendly way they had spoken of his labors. It was not his intention to treat, in the present communication, of the influence exercised by nitrogen and carbon on the properties of iron, but all questions relating to the fabrication of steel and cast-iron had for a long time been carefully studied in his laboratory, and the results would by-and-by yield materials for papers bearing on the following points:—

"1. The relative proportions of nitrogen and carbon required to be introduced into iron to form good steel;

"2. Circumstances opposing acieration or altering the qualities of a steel when formed;

"3. The mode in which carbon penetrates the metallic mass;

"4. The reason why such small quantities of carbon and nitrogen can convert iron into steel;

"5. The study of steels containing metals such as manganese, chromium, tungsten, aluminium, &c.;

"6. Classification of different kinds of cast-iron; examination of the effect which silicium, phosphorus, arsenic, and sulphur exert upon these compounds; study of the cast-iron best suited to the fabrication of puddled steel."

MISCELLANY.

Championnière's Journ. of Pract. Med. states that "M. MAISONNEUVE laid before the Academy of Sciences another instance of the reproduction of bone; in this case, the right side of the inferior maxillary was extracted *in toto*, with the articular condyle, and has been so perfectly replaced by the efforts of nature, that it is now almost impossible to discover which side of the jaw was removed by the surgeon. The patient was aged thirty-five—a circumstance which imparts additional interest to the case, inasmuch as the regeneration of bone at that period of life is less active than in youth. Another singular detail is the temporary preservation of the teeth, which were left by the operator attached to the gums, as movable as a string of beads, and became subsequently consolidated by the closing in of the ossified layers, secreted by the periosteum. Unfortunately, after having performed their functions for a space of two years, they one after another dropped out; but the patient, nevertheless, manages to masticate his food and to speak distinctly."

In relation to a collateral subject, the Paris correspondent of the *Lancet* says: "M. MAISONNEUVE, to the success of whose operations for the ablation of necrosed bone by subperiosteal excision I have already referred, presented to the Academy of Sciences last week several specimens of diseased osseous tissue removed according to his method during the past month. The memoir accompanying these pathological specimens more especially directs the attention of the surgeon to the facilities with which this new *modus operandi* endows the practical branch of medicine. 'An operation such as that of the removal of the upper or lower jawbone,' says the author, 'by the ordinary mode of procedure is a very formidable affair, entailing several incisions, the ligature of many arteries, and the exercise of considerable force and skill; whereas by the subperiosteal method the bone may be enucleated from its fibrous sheathing by a single incision, just as easily as an encysted tumor is withdrawn from its enveloping sac.' Some allowance no doubt should be made for paternal partiality, in the encomiums lavished by M. Maisonneuve upon the surgical improvement which he has to a certain extent originated; still, the modification seems to be most valuable, and strictly in accordance with the conservative principles daily gaining ground, and, moreover, based upon sound physiological data."

The same correspondent writes: "I have to announce another birth in the family of the 'Scopes, the last addition being the *Pharyngoscope*. This instrument—an invention, or rather I should say modification, fathered by DR. MOURA-BOUROUILLON—does not differ in any important particular from its next-door neighbor, the laryngoscope, and consists of a circular concave mirror, with a magnifying lens of short focus. For the examination of the teeth, gums, inside of the cheeks, palate, isthmus of the fauces, pharynx, etc., it will be found convenient, and if cheapened and simplified, will no doubt become popular."

In the course of an interesting paper on the Hygiene of the Sewing Machine, an abstract of which is given in the *Brit. and For. Med.-Chir. Rev.*, the author, DR. GARDNER, of New York, thus refers to one of the causes of Neuralgia: "One lady, in a private family, stated that she had found an attack of neuralgia, to which she was very susceptible, to always ensue from the withdrawal of the animal heat through the iron foot-plate whenever she wore thin slippers; but on covering the plate with a thick bit of carpeting, such a result was never afterward noted."

The *Amer. Med. Monthly* for June contains an interesting essay "on anatomical preparations," by Dr. Jas. E. Steel, the practical character of which is shown by the following extract: "There are various ways in which disarticulated bones may be prepared: but the quickest, and probably the best, is to boil them in a solution of carbonate of potassa and water—about ℥vi to the gallon. This will free them from all extraneous matter, and make them tolerably white. After having been subjected to the foregoing processes and made quite clean, they can be made still whiter by placing and keeping them in an oven until they shall have become quite hot, when they should be taken out, and sulphuric ether applied to their surfaces with a brush, which will have the effect of giving to them a really beautiful appearance."

In the course of a discussion on puerperal eclampsia before the Obstetrical Soc. of Boston, (*Boston Med. and Surg. Jour.*,) Dr. Wellington related a case in which "there was dislocation of the lower jaw several times during the convulsions."

In one of his lectures on the nervous system, (*Amer. Med. Times*,) Dr M. G. Echeverria thus notices some of the causes and varieties of facial palsy and anæsthesia: "Paralysis of the trifacial arises from causes acting upon the nervous centres, upon the nerve itself, or from a traumatic peripheric lesion, as in the case reported by Ch. Bell, of anæsthesia in half of the lips after extraction of a molar tooth. Anæsthesia in the corresponding side of the face, with loss of smell, taste, and at times hearing, dryness in the pituitary, insensibility, and changes of nutrition in the conjunctiva and cornea, with *mydriasis*, or dilatation of the pupil, are the principal symptoms of paralysis of the trifacial. As to taste, it will only be lost in the anterior part of the tongue, where the lingual nerve is distributed; the gums are also swollen and torn, mastication becomes impaired, and the lower jaw hangs after paralysis in the pterigoides, the masseter, and temporal muscles."

According to the *Druggist*, "a transparent cement for glass is made by dissolving one part of india-rubber in chloroform, and adding sixteen parts, by measure, of gum mastic in powder. Digest for two days, and frequently shake the vessel in which these substances are contained. The cement is applied with a fine camel's-hair brush."

The *Sci. Amer.* gives the following on the relative tenacity of metals: "Guyton Morveau has carefully determined the weight which can be supported by wires of a uniform diameter of 0.787 of an English line without fracture.

Metals.	Pounds.	Metals.	Pounds.
Iron	549·250	Gold	150·753
Copper	302·278	Zinc	109·540
Platinum	274·320	Tin	34·630
Silver	187·137	Lead	17·621"

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The Physician's Pocket, Dose, and Symptom Book. By Joseph H. Wythes, M.D. Third edition. Philadelphia: Lindsay & Blakiston, 1861. This little work affords a condensed summary of some of the leading facts in practical medicine, and is hence adapted to the wants of those who require the extraneous aid of such a manual. It is neatly printed and bound.

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